XR-CA300/CA320/CA320X

SERVICE MANUAL

Ver 1.4 2003.08

US Model
Canadian Model
XR-CA300

E Model
XR-CA320/CA320X

Russian Model
XR-CA320X

Photo: XR-CA320X

Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MG-36SZ11-32

SPECIFICATIONS

AUDIO POWER SPECIFICATIONS (XR-CA300: US model)

POWER OUTPUT AND TOTAL HARMONIC DISTORTION
22 watts per channel minimum continuous average power into 4 ohms, 4 channels driven from 20 Hz to 20 kHz with no more than5 % total harmonic distortion.

Other specifications

Cassette player section

Tape track	4-track 2-channel stereo
Wow and flutter	0.13 % (WRMS)
Frequency response	30 – 15,000 Hz
Signal-to-noise ratio	55 dB

Tuner section

FM

Tuning range	**XR-CA300:** FM tuning interval: 87.5 – 107.9 MHz (at 200 kHz step) **XR-CA320/CA320X:** FM tuning interval: 50 kHz/200 kHz switchable 87.5 – 108.0 MHz (at 50 kHz step) 87.5 – 107.9 MHz (at 200 kHz step)
Antenna terminal	External antenna connector
Intermediate frequency	10.7 MHz
Usable sensitivity	11 dBf
Selectivity	75 dB at 400 kHz
Signal-to-noise ratio	62 dB (stereo), 68 dB (mono)
Harmonic distortion at 1 kHz	0.7 % (stereo), 0.5 % (mono)
Separation	33 dB at 1 kHz
Frequency response	30 – 15,000 Hz

AM

Tuning range	**XR-CA300:** AM tuning interval: 530 – 1,710 kHz (at 10 kHz step) **XR-CA320/CA320X:** AM tuning interval: 9 kHz/10 kHz switchable 531 – 1,602 kHz (at 9 kHz step) 530 – 1,710 kHz (at 10 kHz step)
Antenna terminal	External antenna connector
Intermediate frequency	10.7 MHz/450 kHz
Sensitivity	30 µV

Power amplifier section

Outputs	Speaker outputs (sure seal connectors)
Speaker impedance	4 – 8 ohms
Maximum power output	45 W × 4 (at 4 ohms)

General

Outputs	Audio output Power antenna relay control lead Power amplifier control lead
Input	Telephone ATT control lead (XR-CA320/CA320X only)
Tone controls	Bass ±10 dB at 20 Hz Treble ±10 dB at 20 kHz
Power requirements	12 V DC car battery (negative ground)
Dimensions	Approx. 178 × 50 × 178 mm ($7\,^{1}/_{8} \times 2 \times 7\,^{1}/_{8}$ in.) (w/h/d)
Mounting dimensions	Approx. 182 × 53 × 161 mm ($7\,^{1}/_{4} \times 2\,^{1}/_{8} \times 6\,^{3}/_{8}$ in.) (w/h/d)
Mass	Approx. 1.2 kg (2 lb 10 oz)
Supplied accessories	Parts for installation and connections (1 set) Front panel case (1)

Design and specifications are subject to change without notice.

FM/AW CASSETTE CAR STEREO

9-870-234-15
2003H05-1
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e Vehicle Company
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Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 ˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

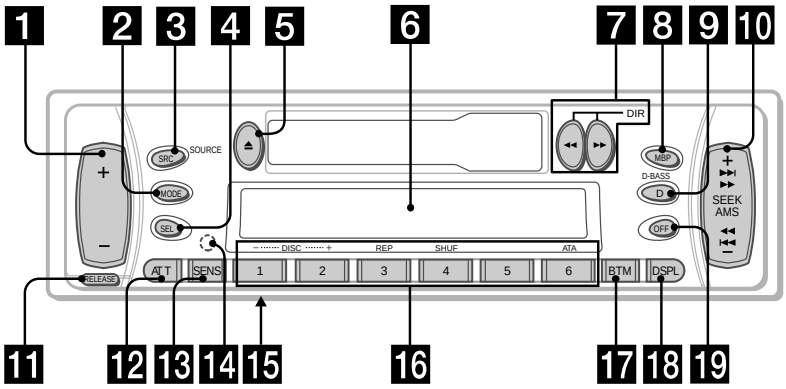
Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SECTION 1
GENERAL

This section is extracted from instruction manual.

Location of controls



Refer to the pages listed for details.

1 Volume +/– button 7

2 MODE button

During radio reception:
BAND select 8, 9

During CD/MD playback:
CD/MD unit select 12

3 SOURCE (TUNER/CD/MD) button 8, 9, 12

4 SEL (select) button 7, 10, 11, 12

5 ⏏ (eject) button 7, 8, 9, 12

6 Display window

7 ◀◀/▶▶ (fast winding)/DIR (tape transport direction change) buttons 7, 8

8 MBP (My Best sound Position) button 11

9 D-BASS button 11

10 SEEK/AMS +/– button 9, 13
Seek 9
Automatic Music Sensor 13
Manual search 13

11 RELEASE (front panel release) button 6, 14

12 ATT (attenuate) button 10

13 SENS button 9

14 RESET button (located on the front side of the unit behind the front panel) 6

15 Frequency select switch* (located on the bottom of the unit)
See "Frequency select switch" in the Installation/Connections manual.

16 Number buttons 8, 9, 10, 12, 13
During radio reception:
Preset number select 9

During tape playback:
⑥ ATA 8

During CD/MD playback:
① DISC – 13
② DISC + 13
③ REP 13
④ SHUF 13

17 BTM button 8

18 DSPL (display mode change) button 7, 12

19 OFF button** 6

* XR-CA320/CA320X only

** Warning when installing in a car without ACC (accessory) position on the ignition key switch
Be sure to press OFF on the unit for two seconds to turn off the clock display after turning off the engine.
When you press OFF momentarily, the clock display does not turn off and this causes battery wear.

Setting the clock

The clock uses a 12-hour digitalindication.

Example: To set the clock to 10:08

1 Press DSPL for two seconds.

The hour indicationflashes.

❶ Press either side of the volume button to set the hour.

to go forward

to go back

❷ Press SEL.

The minute indicationflashes.

❸ Press either side of the volume button to set the minute.

to go forward

to go back

2 Press DSPL.

The clock starts.

After the clock setting is complete, the display returns to normal playback mode.

Installation

Precautions

- Choose the installation location carefully so that the unit will not interfere with normal driving.
- Avoid installing the unit in areas subject to dust, dirt, excessive vibration, or high temperatures, such as in direct sunlight or near heater ducts.
- Use only the supplied mounting hardware for a safe and secure installation.

Mounting angle adjustment

Adjust the mounting angle to less than 20°.

How to detach and attach the front panel

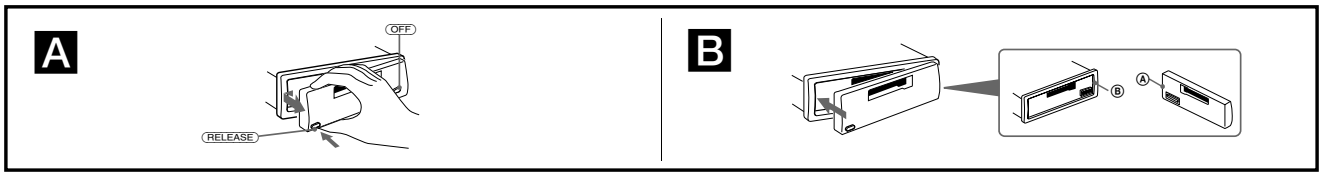
Before installing the unit, detach the front panel.

A To detach

Before detaching the front panel, be sure to press (OFF). Press (RELEASE), then slide the front panel a little to the left, and pull it off towards you.

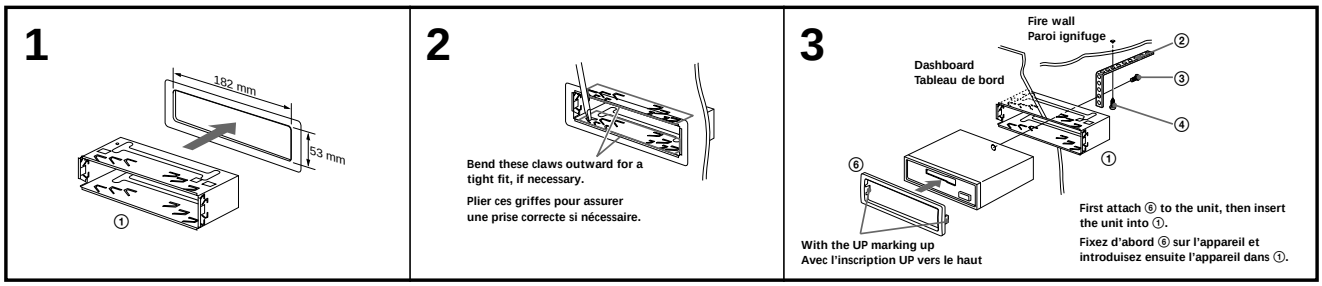
B To attach

Attach part Ⓐ of the front panel to part Ⓑ of the unit as illustrated and push the left side into position until it clicks.



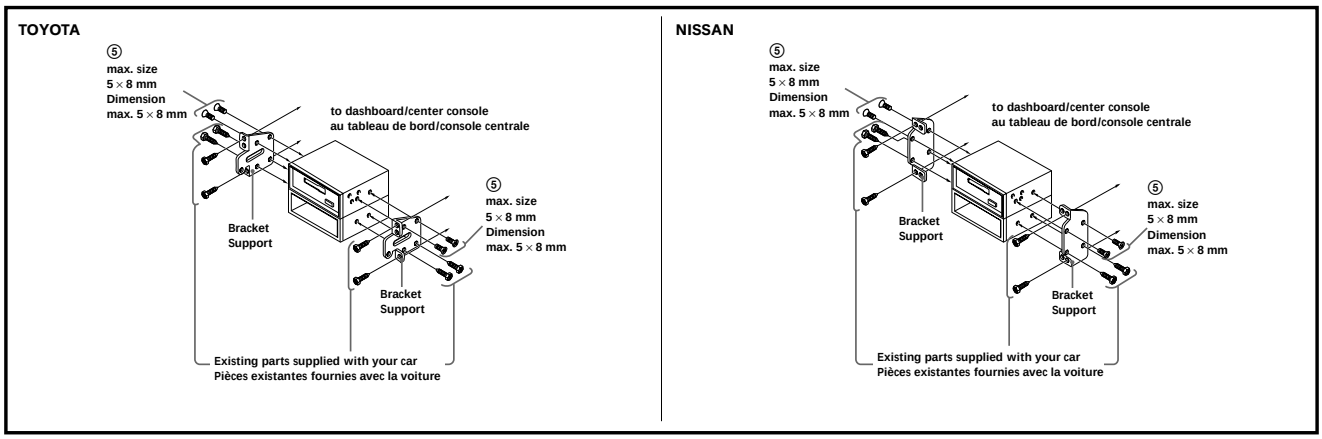
Mounting example

Installation in the dashboard



Mounting the unit in a Japanese car

You may not be able to install this unit in some makes of Japanese cars. In such a case, consult your Sony dealer.



Note

To prevent malfunction, install only with the supplied screws ⑤.

Installation

Précautions

- Choisir soigneusement l'emplacement d'installation pour que l'appareil ne gêne pas le chauffeur pendant la conduite.
- Eviter d'installer l'appareil dans un endroit exposé à des températures élevées, comme en plein soleil ou à proximité d'une bouche d'air chaud, ou à de la poussière, saleté ou vibrations violentes.
- Pour garantir un montage sûr, n'utiliser que le matériel fourni.

Réglage de l'angle de montage

Ajuster l'inclinaison à un angle inférieur à 20°.

Retrait et pose de la façade

Avant d'installer l'appareil, déposer la façade.

A Pour retirer

Avant de déposer la façade, ne pas oublier d'appuyer sur (OFF). Appuyer ensuite sur (RELEASE), puis faire glisser la façade légèrement vers la gauche et enlever la façade en tirant à soi.

B Pour attacher

Fixez la partie Ⓐ de la façade sur la partie Ⓑ de l'appareil, comme indiqué sur l'illustration, puis poussez jusqu'au déclic.

Exemple de montage

Installation dans le tableau de bord

Installation de l'appareil dans une voiture japonaise

Cet appareil ne peut pas être installé dans certaines voitures japonaise. Consultez, dans ce cas, votre concessionnaire Sony.

Remarque

Pour éviter tout dysfonctionnement, utilisez uniquement les vis ⑤ pour le montage.

Connections

Cautions

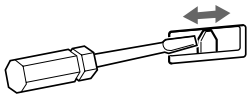
- This unit is designed for negative ground 12 V DC operation only.
- Be careful not to pinch any wires between a screw and the body of the car or this unit or between any moving parts such as the seat railing, etc.
- Before making connections, disconnect the ground terminal of the car battery to avoid short circuits.
- Connect the **yellow** and **red** power input leads only after all other leads have been connected.
- Be sure to connect the red power input lead to the positive 12 V power terminal which is energized when the ignition key is in the accessory position.
- **Run all ground wires to a common ground point.**
- Connect the yellow cord to a free car circuit rated higher than the unit's fuse rating. If you connect this unit in series with other stereo components, the car circuit they are connected to must be rated higher than the sum of the individual component's fuse rating. If there are no car circuits rated as high as the unit's fuse rating, connect the unit directly to the battery. If no car circuits are available for connecting this unit, connect the unit to a car circuit rated higher than the unit's fuse rating in such a way that if the unit blows its fuse, no other circuits will be cut off.
- Be sure to insulate any loose unconnected wires with electrical tape for safety.
- When installing a car without ACC (accessory) position on the ignition key switch, connect the red power input lead to the +12 V power terminal which is energized at all times with the yellow lead.

Warning when installing in a car without ACC (accessory) position on the ignition key switch

Be sure to press (OFF) on the unit for two seconds to turn off the clock display after turned off the engine.
When you press (OFF) momentarily, the clock display does not turn off and this causes battery wear.

Frequency select switch (XR-CA320/320X only)

The AM (FM) tuning interval is factory-set to the 9K (50 K) position. If the frequency allocation system of your country is based on 10 kHz (200 kHz) interval, set the switch on the bottom of the unit to the 10 K (200 K) position before making connections.

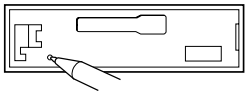


Change the position with a jeweler's screwdriver, etc.

Note
When you change the position of the switch, be sure to press the reset buttons after the connections are completed.

Reset button

When the installation and connections are complete, be sure to press the reset button with a ball-point pen, etc.



Notes of connection diagram

Notes on the control and power supply leads
- *The power antenna control lead (blue) supplies +12 V DC when you turn on the unit.*
- *When your car has a built-in FM/AM antenna in the rear/side glass, it is necessary to connect the power antenna control lead (blue) or the accessory power input lead (red) to the power terminal of the existing antenna booster. For details, consult your dealer.*
- *A power antenna without a relay box cannot be used with this unit.*

Memory hold connection
When the yellow power input lead is connected, power will always be supplied to the memory circuit even when the ignition switch is turned off.

Notes on speaker connection
- *Before connecting the speakers, turn the unit off.*
- *Use speakers with an impedance of 4 to 8 ohms, and with adequate power handling capacities. Otherwise, the speakers may be damaged.*
- *Do not connect the terminals of the speaker system to the car chassis, and do not connect the terminals of the right speaker with those of the left speaker.*
- *Do not attempt to connect the speakers in parallel.*
- *Do not connect any active speakers (with built-in amplifiers) to the speaker terminals of the unit. Doing so may damage the active speakers. Be sure to connect passive speakers to these terminals.*

Connexions

Précautions

- Cet appareil est exclusivement conçu pour fonctionner sur une tension de 12 V CC avec masse négative.
- Veiller à ne pas coincer de fils entre une vis et la carrosserie de la voiture ou cet appareil ou encore entre des pièces mobiles comme les glissières des sièges, etc.
- Avant d'effectuer les connexions, débrancher la borne de terre de la batterie du véhicule pour éviter tout court-circuit.
- Brancher les fils d'entrée d'alimentation **jaune** et **rouge** seulement après avoir terminé tous les autres branchements.
- Veiller à ne pas raccorder le fil rouge d'entrée d'alimentation à la borne positive de 12 V qui est alimentée quand la clé de contact est sur la position accessoires.
- **Rassembler tous les fils de terre en un point de masse commun.**
- Brancher le câble jaune à un circuit libre de la voiture dont la capacité nominale est supérieure à la capacité du fusible de l'appareil. Si vous branchez cet appareil en série avec d'autres composants stéréo, le circuit de la voiture auquel ils sont raccordés doit afficher une capacité nominale supérieure à la somme des capacités individuelles de chaque composant. S'il n'y a pas de circuits de voiture affichant une capacité égale à la capacité du fusible de l'appareil, brancher l'appareil directement à la batterie. Si aucun circuit de voiture n'est disponible pour connecter cet appareil, brancher l'appareil à un circuit de voiture supérieur à la capacité du fusible de l'appareil de telle sorte que si l'appareil grille son fusible, aucun autre circuit ne soit coupé.
- Veillez à isoler tout fil ou câble non connectés avec du ruban électrique approprié.
- Lors de l'installation dans une voiture dont le contact ne possède pas de position ACC (accessoire), raccordez le fil d'entrée électrique à la borne d'alimentation +12 V alimentée en permanence avec le fil jaune.

Avertissement en cas d'installation dans une voiture dont le contact ne comporte pas de position ACC (accessoires)

N'oubliez pas d'appuyer sur le bouton (OFF) de l'appareil pendant deux secondes après avoir coupé le moteur de façon à désactiver l'affichage de l'horloge.
Si vous appuyez brièvement sur (OFF), l'affichage de l'horloge n'est pas désactivé, ce qui provoque une usure de la batterie.

Commutateur de sélection de la fréquence (XR-CA320/320X uniquement)

L'intervalle de réglage des fréquences AM (FM) est réglé d'usine sur 9K (50 K). Si le système d'attribution des fréquences est basé sur un intervalle de 10 kHz (200 kHz), placez le commutateur situé sur la partie inférieure de l'appareil sur la position 10 K (200 K) avant de procéder au raccordement.

Modifiez la position à l'aide d'un tournevis de bijoutier, etc.

Remarque
Lorsque vous modifiez la position du commutateur, pressez les touches de réinitialisation lorsque les connexions sont terminées.

Touche de réinitialisation

Quand l'installation et les connexions sont terminées, appuyer sur la touche de réinitialisation avec un stylo à bille, etc.

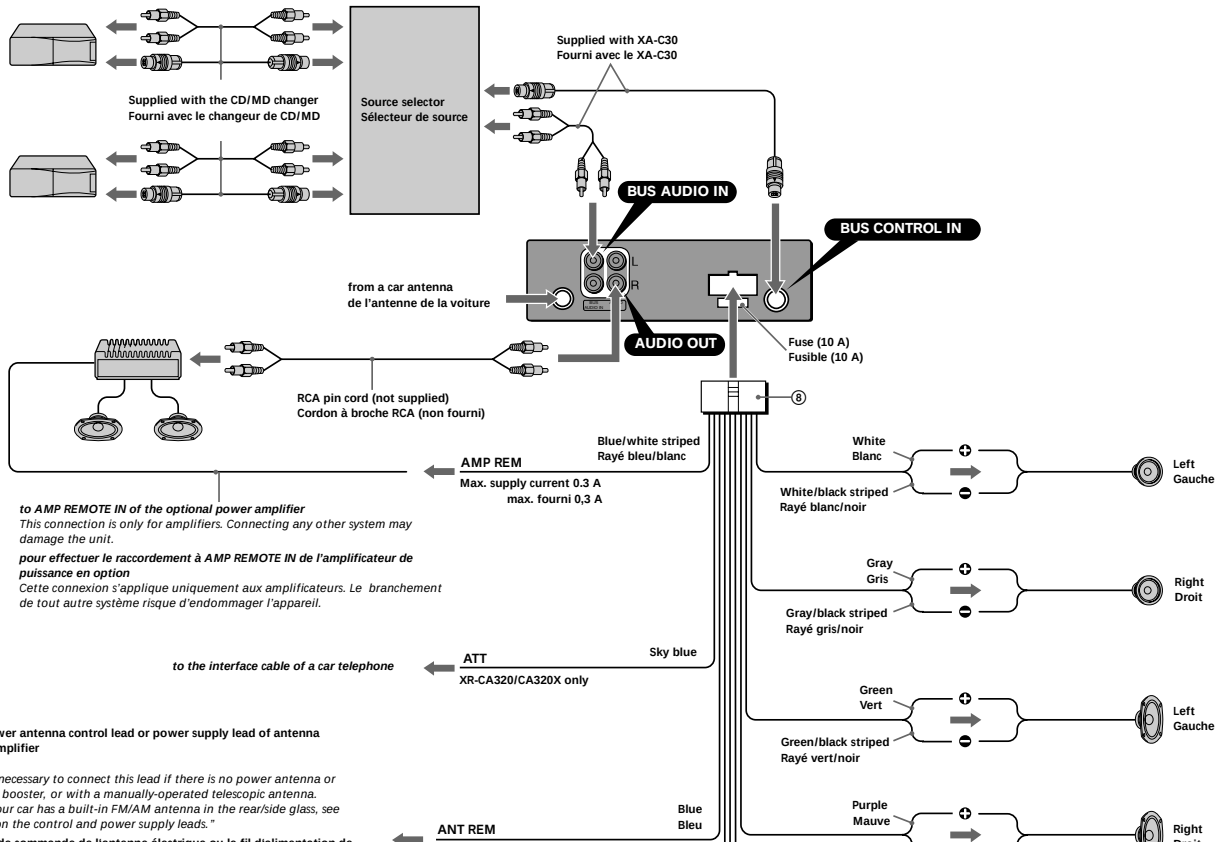
Remarques sur le diagramme de connexion

Remarques sur les fils de commande et d'alimentation
- *Le fil de commande de l'antenne électrique (bleu) fournit une alimentation de + 12 V CC lorsque vous mettez l'appareil sous tension.*
- *Si votre voiture est équipée d'une antenne FM/AM intégrée dans la vitre arrière latérale, vous devez raccorder le fil de commande d'antenne électrique (bleu) ou le fil d'entrée d'alimentation d'accessoire (rouge) à la borne d'alimentation de l'amplificateur d'antenne existant. Pour plus de détails, consultez votre revendeur.*
- *Une antenne électrique sans boîtier de relais ne peut pas être utilisée avec cet appareil.*

Connexion pour la conservation de la mémoire
Lorsque le fil d'entrée d'alimentation jaune est raccordé, le circuit de la mémoire est alimenté en permanence même si la clé de contact est sur la position d'arrêt.

Remarques sur la connexion des haut-parleurs
- *Avant de raccorder les haut-parleurs, mettre l'appareil hors tension.*
- *Utiliser des haut-parleurs ayant une impédance de 4 à 8 ohms et une capacité adéquate sous peine de les endommager.*
- *Ne pas raccorder pas les bornes du système de haut-parleur au châssis de la voiture, et ne pas connecter les bornes du haut-parleur droit à celles du haut-parleur gauche.*
- *Ne pas tenter de raccorder les haut-parleurs en parallèle.*
- *Ne pas connecter de haut-parleurs actifs (équipés d'un amplificateur intégré) aux bornes de haut-parleur de l'appareil. Les haut-parleurs actifs risquent sinon d'être endommagés. Veiller par conséquent à raccorder des haut-parleurs passifs à ces bornes.*

Connection diagram
Schémas de connexion



to AMP REMOTE IN of the optional power amplifier
This connection is only for amplifiers. Connecting any other system may damage the unit.

pour effectuer le raccordement à AMP REMOTE IN de l'amplificateur de puissance en option
Cette connexion s'applique uniquement aux amplificateurs. Le branchement de tout autre système risque d'endommager l'appareil.

to the interface cable of a car telephone

to the power antenna control lead or power supply lead of antenna booster amplifier

Notes

- *It is not necessary to connect this lead if there is no power antenna or antenna booster, or with a manually-operated telescopic antenna.*
- *When your car has a built-in FM/AM antenna in the rear/side glass, see "Notes on the control and power supply leads."*

vers le fil de commande de l'antenne électrique ou le fil d'alimentation de l'amplificateur d'antenne

Remarque

- *Il n'est pas nécessaire de raccorder ce fil s'il n'y a pas d'antenne électrique ni d'amplificateur d'antenne, ou avec une antenne télescopique manuelle.*
- *Si votre voiture est équipée d'une antenne FM/AM intégrée dans la vitre arrière/latérale, voir "Remarques sur les fils de commande et d'alimentation".*

to the +12 V power terminal which is energized at all times
Be sure to connect the black ground lead first.

à la borne +12 V qui est alimentée en permanence
Raccordez d'abord le fil de masse noir.

to the +12 V power terminal which is energized at the accessory position of the ignition key switch

Notes

- *If there is no accessory position, connect to the +12 V power (battery) terminal which is energized at all times.*
  Be sure to connect the black ground to it first.
- *When your car has a built-in FM/AM antenna in the rear/side glass, see "Notes on the control and power supply leads."*

à la borne +12 V qui est alimentée quand la clé de contact est sur la position accessoires

Remarque

- *S'il n'y a pas de position accessoires, raccordez la borne d'alimentation (batterie) +12 V qui est en permanence sous tension.*
  Raccordez d'abord le fil de masse noir.
- *Si votre voiture est équipée d'une antenne FM/AM intégrée dans la vitre arrière/latérale, voir "Remarques sur les fils de commande et d'alimentation".*

to a metal place in the car
First connect the black ground lead, then connect the yellow and red power input leads.

à un point métallique de la voiture
Branchez d'abord le fil de masse noir et, ensuite, les fils d'entrée d'alimentation jaune et rouge.

Connection example
Exemple de raccordement

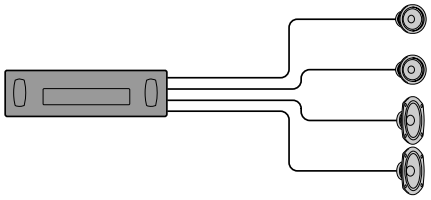
Equipment used in illustrations (not supplied)
Appareils utilisés dans les illustrations (non fournis)

- Front speaker / Haut-parleur frontal
- Power amplifier / Amplificateur de puissance
- Rear speaker / Haut-parleur arrière
- CD/MD changer / Changeur de CD/MD

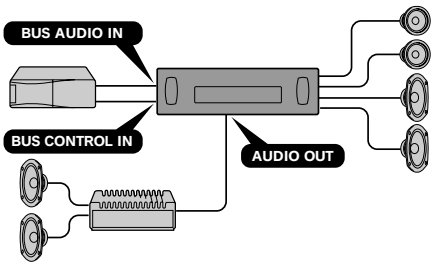
For connecting two or more changers, the source selector XA-C30 (optional) is necessary.

Dans le cas du raccordement de deux changeurs ou plus, le sélecteur de source XA-C30 (optionnel) est indispensable.

A



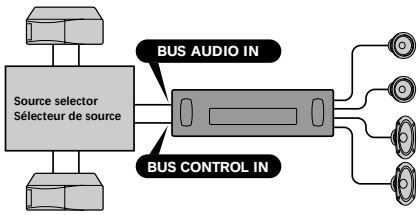
B



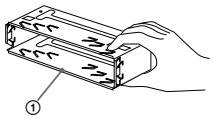
Notes
- *Be sure to connect the ground cord before connecting the amplifier.*
- *If you connect an optional power amplifier and do not use the built-in amplifier, the beep sound will be deactivated.*

Remarques
- *Raccordez d'abord le fil de masse avant de connecter l'amplificateur.*
- *Si vous raccordez un amplificateur de puissance et que vous n'utilisez pas l'amplificateur intégré, le bip sonore est désactivé.*

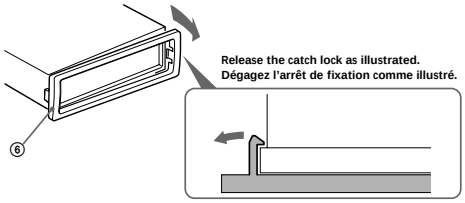
C



Cautions
- Cautionary notice for handling the bracket ①.
  Handle the bracket carefully to avoid injuring your fingers.
- Remove the protection collar ⑥ before installing.



Attentions
- Remarque importante pour la manipulation du support ①.
  Manipulez précautionneusement le support pour éviter de vous blesser aux doigts.
- Déposez le collier de protection ⑥ avant l'installation.



SECTION 2
DISASSEMBLY

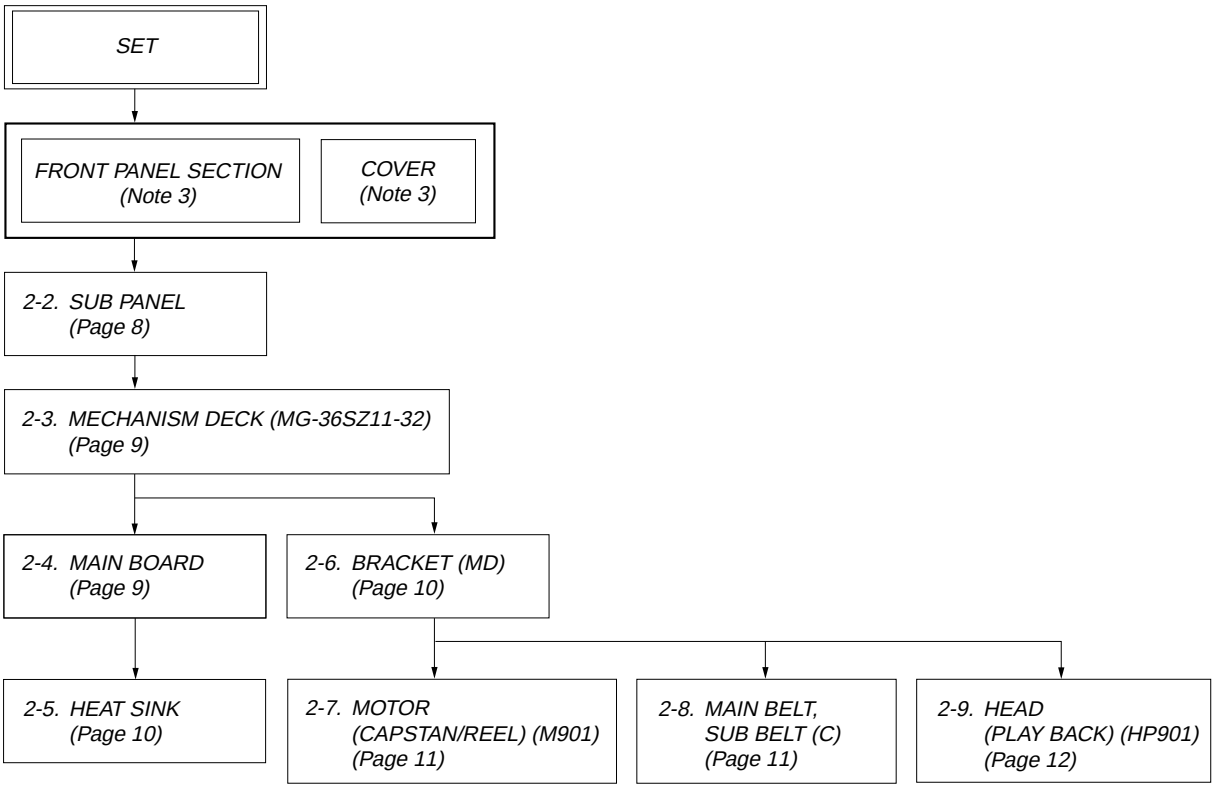
• This set can be disassembled in the order shown below.

2-1. DISASSEMBLY FLOW

Note 1: *The process described in* ▣ *can be performed in any order.*

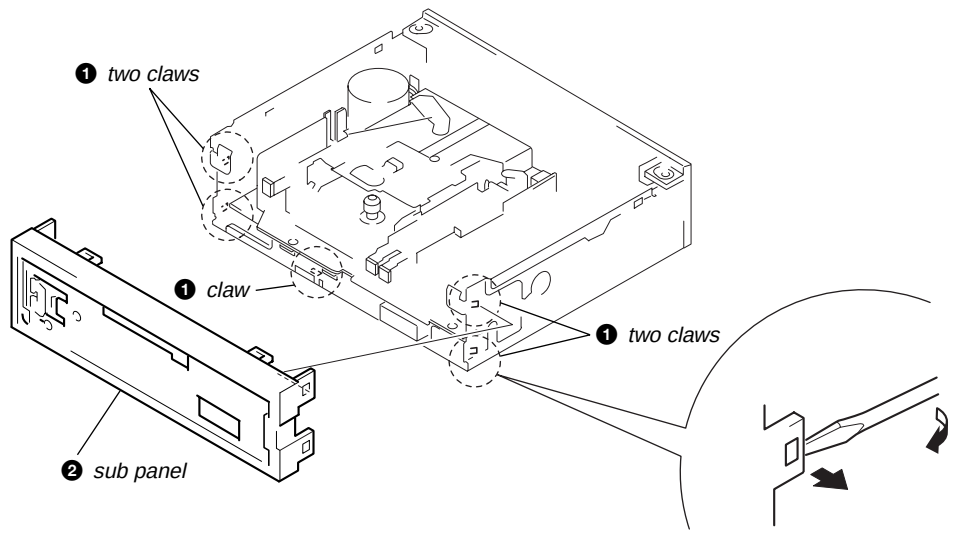
Note 2: *Without completing the process described in* ▣*, the next process can not be performed.*

Note 3: *Illustration of disassembly is omitted.*

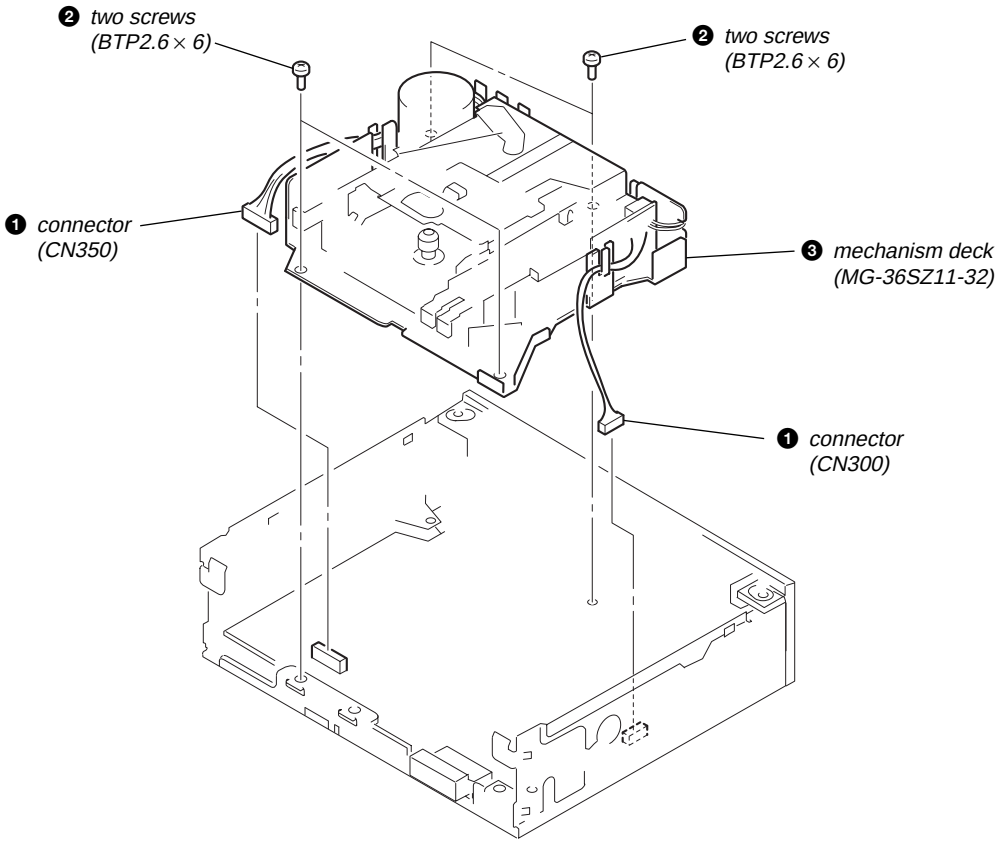

SET
FRONT PANEL SECTION (Note 3)
COVER (Note 3)
2-2. SUB PANEL (Page 8)
2-3. MECHANISM DECK (MG-36SZ11-32) (Page 9)
2-4. MAIN BOARD (Page 9)
2-6. BRACKET (MD) (Page 10)
2-5. HEAT SINK (Page 10)
2-7. MOTOR (CAPSTAN/REEL) (M901) (Page 11)
2-8. MAIN BELT, SUB BELT (C) (Page 11)
2-9. HEAD (PLAY BACK) (HP901) (Page 12)

Note: Follow the disassembly procedure in the numerical order given.

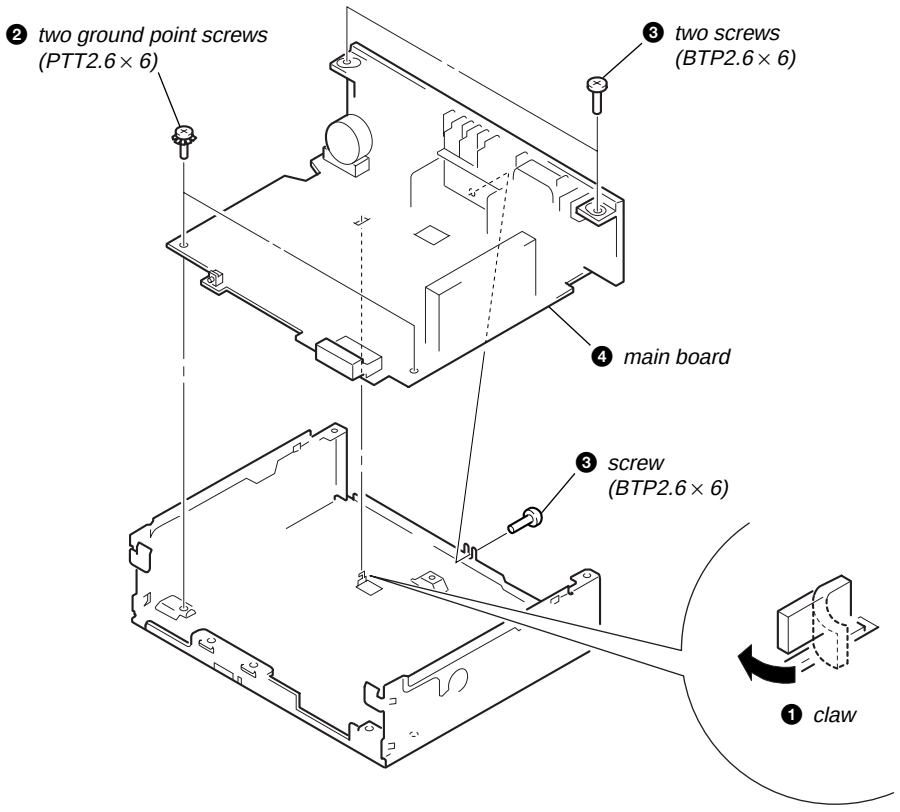
2-2. SUB PANEL



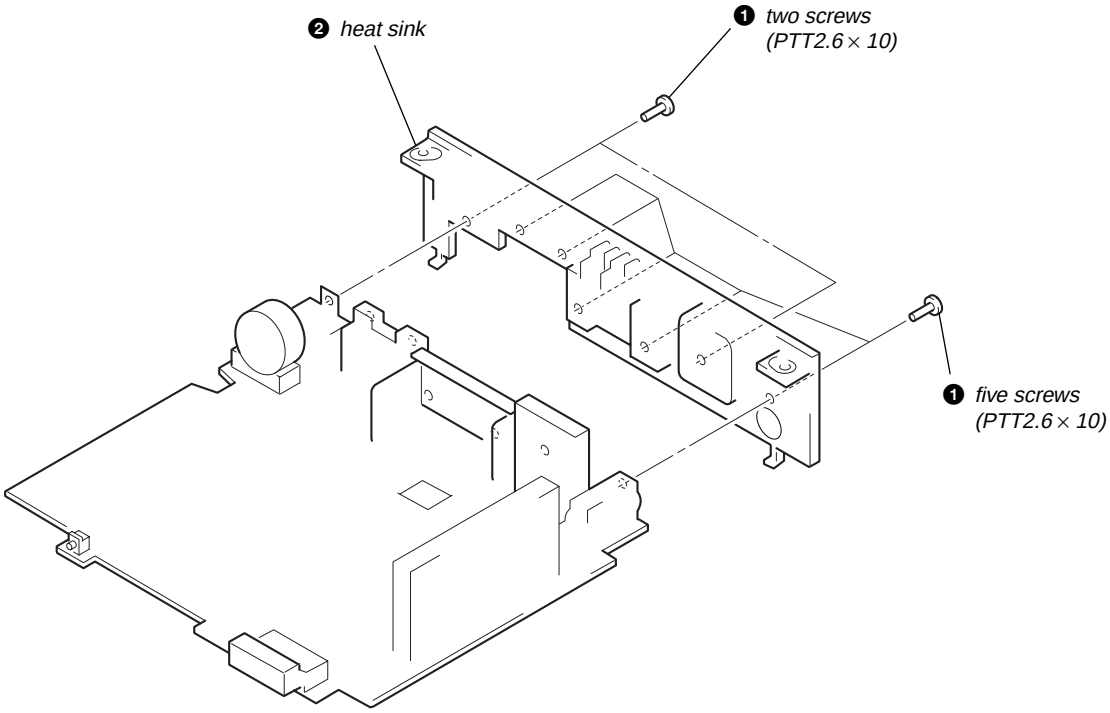
2-3. MECHANISM DECK (MG-36SZ11-32)



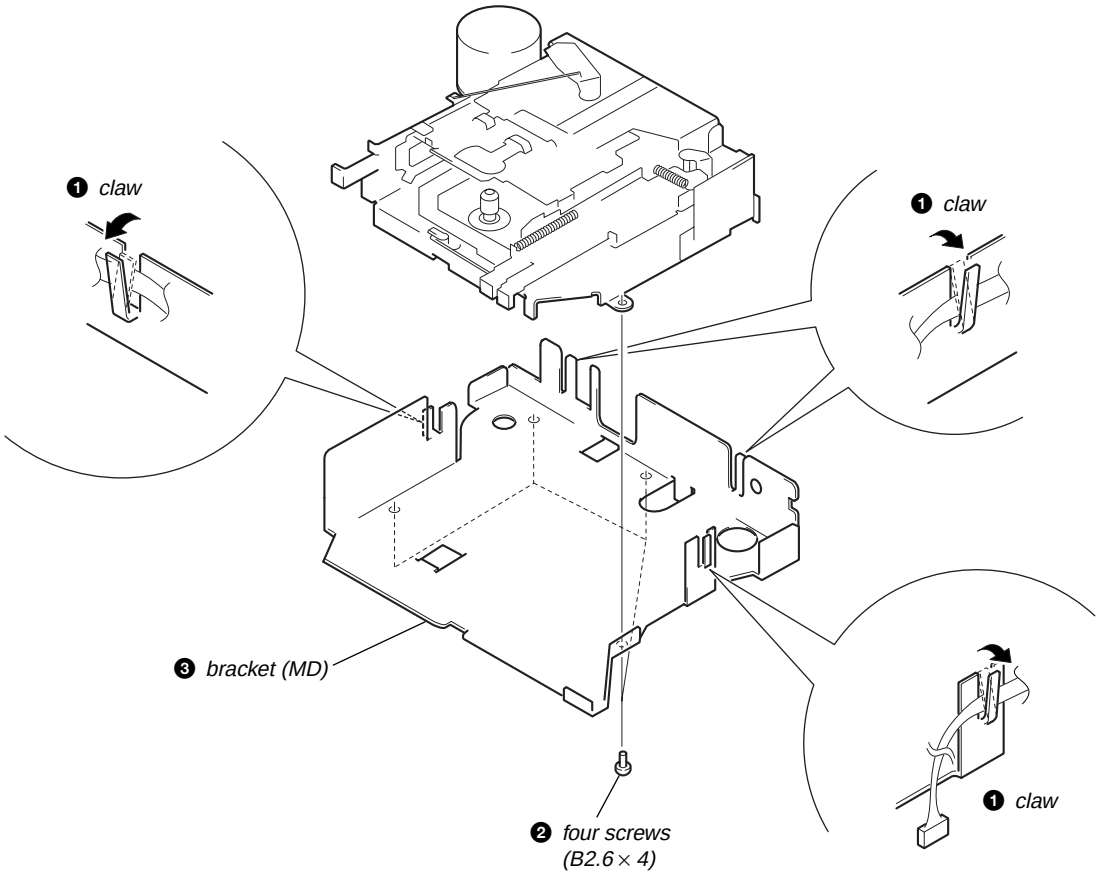
2-4. MAIN BOARD



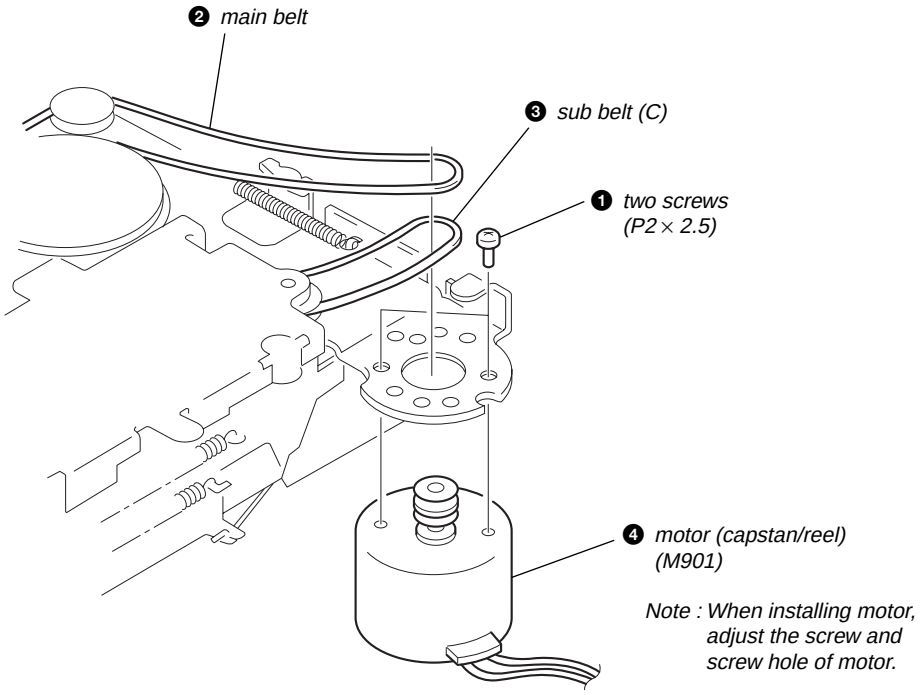
2-5. HEAT SINK



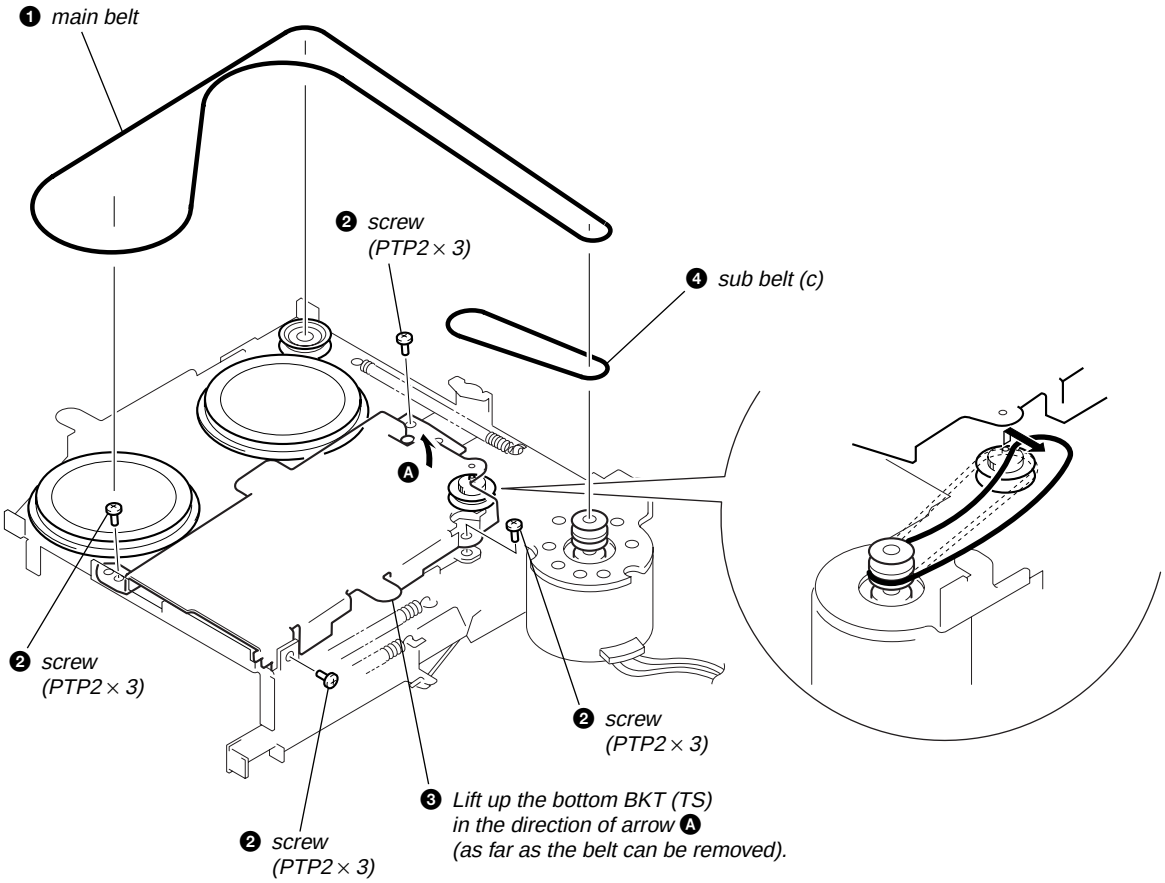
2-6. BRACKET (MD)



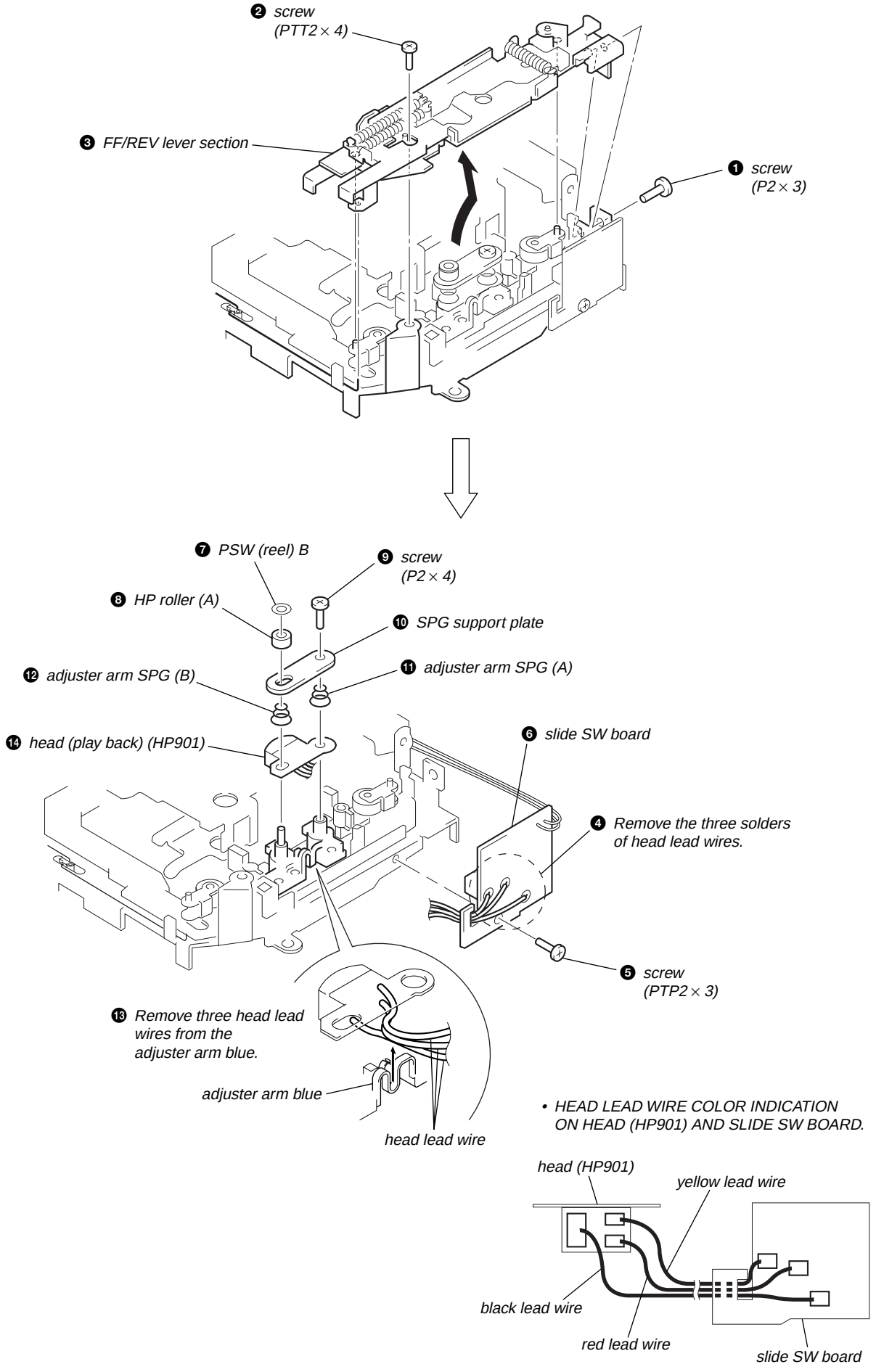
2-7. MOTOR (CAPSTAN/REEL) (M901)



2-8. MAIN BELT, SUB BELT (C)



2-9. HEAD (PLAY BACK) (HP901)


❷ screw (PTT2 × 4)
❸ FF/REV lever section
❶ screw (P2 × 3)
❼ PSW (reel) B
❾ screw (P2 × 4)
❽ HP roller (A)
❿ SPG support plate
⓬ adjuster arm SPG (B)
⓫ adjuster arm SPG (A)
⓮ head (play back) (HP901)
❻ slide SW board
❹ Remove the three solders of head lead wires.
❺ screw (PTP2 × 3)
⓭ Remove three head lead wires from the adjuster arm blue.
adjuster arm blue
head lead wire
• HEAD LEAD WIRE COLOR INDICATION ON HEAD (HP901) AND SLIDE SW BOARD.
head (HP901)
yellow lead wire
black lead wire
red lead wire
slide SW board

SECTION 3
MECHANICAL ADJUSTMENTS

1. Clean the following parts with a denatured-alcohol-moistened swab:
   playback head pinch roller
   rubber belt capstan
   idler
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. The adjustments should be performed with the power supply voltage (14.4 V) unless otherwise noted.

Note: With this set, it is not necessary to apply suitable locking compound to the parts after the azimuth adjustment.

• Torque Measurement

Mode	Torque Meter	Meter Reading
Forward	CQ-102C	2.46 – 5.39 mN•m (25 – 55 g•cm) (0.35 – 0.76 oz•inch)
Forward Back Tension	CQ-102C	0.15 – 0.39 mN•m (1.5 – 4 g•cm) (0.02 – 0.06 oz•inch)
Reverse	CQ-102RC	2.46 – 5.39 mN•m (25 – 55 g•cm) (0.35 – 0.76 oz•inch)
Reverse Back Tension	CQ-102RC	0.15– 0.39 mN•m (1.5 – 4 g•cm) (0.02 – 0.06 oz•inch)
FF, REW	CQ-201B	4.91 – 14.70 mN•m (50 – 150 g•cm) (0.69 – 2.08 oz•inch)

• Tape Tension Measurement

Mode	Tension Meter	Meter Reading
Forward	CQ-403A	more than 5.89 mN•m (more than 60 g) (more than 2.12 oz)
Reverse	CQ-403R	

SECTION 4
ELECTRICAL ADJUSTMENTS

TEST MODE

This set have the test mode function. In the test mode, FM Auto Seek/Stop Level and AM Auto Seek/Stop Level adjustments can be performed easier than it in ordinary procedure.

<Set the Test Mode>

1. Turn ON the regulated power supply. (All LEDs on the set lights up, and the clock is displayed.)
   Note: Press the [OFF] button, if the clock is not displayed.
2. Push the [4] button.
3. Push the [5] button.
4. Press the [1] button for more than two seconds.
5. Then the display indicates all lights, the test mode is set.

<Release the Test mode>

1. Push the [OFF] button.

TAPE DECK SECTION

0 dB= 0.775 V

1. The adjustments should be performed in the order given in this service manual.
2. The adjustments should be performed for both L-CH and R-CH.

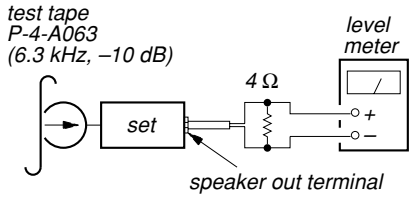
Test Tape

Type	Signal	Used for
P-4-A063	6.3 kHz, –10 dB	head azimuth adjustment
WS-48A	3 kHz, 0 dB	tape speed adjustment

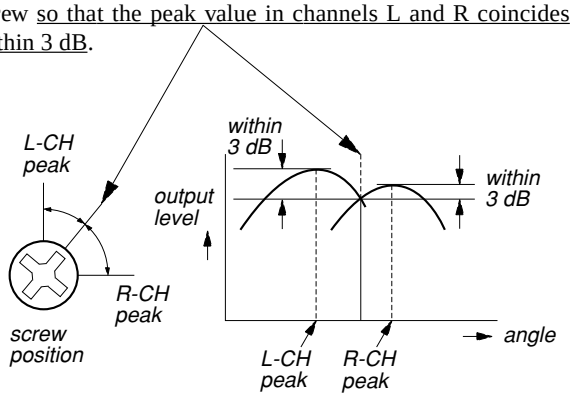
PB Head Azimuth Adjustment

Procedure:

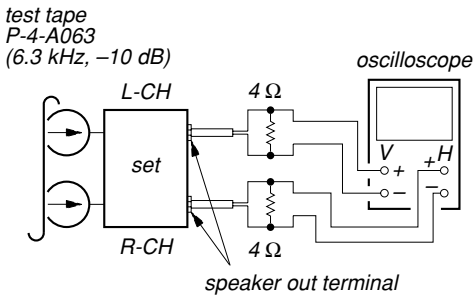
1. Put the set into the FWD PB mode.

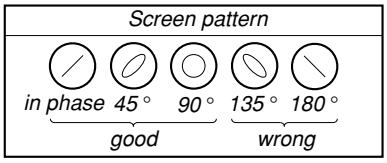


2. Turn the screw and check the output peak value. Adjust the screw so that the peak value in channels L and R coincides within 3 dB.



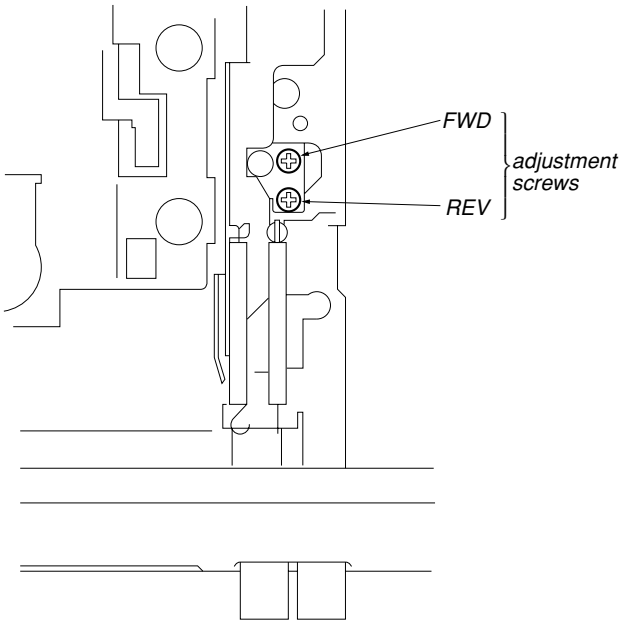
3. Check the phase in the FWD PB mode.





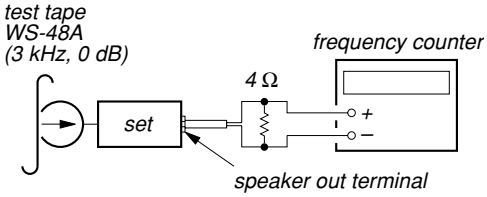
4. Repeat the above adjustment for the REV PB mode.
5. Check that output level difference between FWD PB mode and REV PB mode is within 4 dB.

Adjustment Location: PB head



Tape Speed Adjustment

Setting:



Procedure:

1. Put the set into the FWD PB mode.
2. Adjust adjustment resistor for inside capstan motor so that the reading on the frequency counter becomes in 3,015 Hz.

Specified Value: 2,940 to 3,090 Hz

Adjustment Location: See page 17.

TUNER SECTION

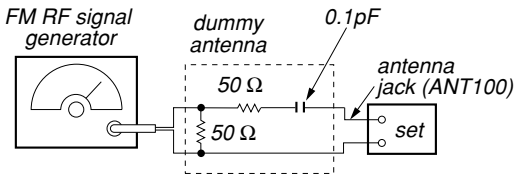
0 dB=1 μV

Cautions during repair
When the tuner unit is defective, replace it by a new one because its internal block is difficult to repair.

Note: Adjust the tuner section in the sequence shown below.
1. FM Auto Seek/Stop Level Adjustment
2. FM Stereo Separation Adjustment
3. AM Auto Seek/Stop Level Adjustment

FM Auto Seek/Stop Level Adjustment

Setting:
SOURCE button: FM
FREQUENCY SELECT switch: FM 50 k (XR-CA320/CA320X only)

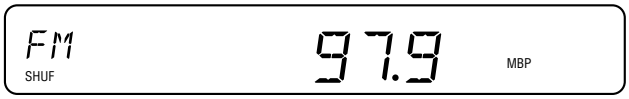


Carrier frequency : 97.9 MHz (XR-CA300)
98.00 MHz (XR-CA320/CA320X)
Output level : 22 dB (12.6 μV)
Mode : mono
Modulation : 1 kHz, 22.5 kHz deviation (30%)

Procedure:
1. Set to the test mode. (see page 13)
2. Push the SOURCE button and set to FM.

Display

(XR-CA300)

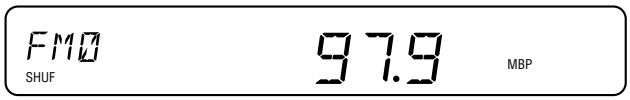


(XR-CA320/CA320X)

3. Adjust with the volume RV3 on TU100 so that the “FM” indication turns to “FM0” indication on the display window. But, in case of already indicated “FM0”, turn the RV3 so that put out light “0” indication and adjustment.

Display

(XR-CA300)



(XR-CA320/CA320X)

Adjustment Location: See page 17.

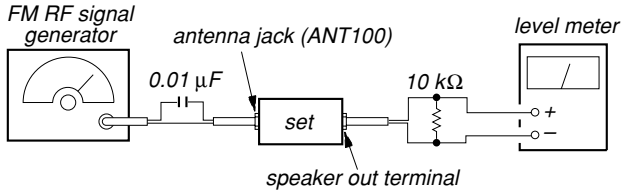
FM Stereo Separation Adjustment

Setting:

SOURCE button: FM

FREQUENCY SELECT switch: FM 50 k

(XR-CA320/CA320X only)



Carrier frequency : 97.9 MHz (XR-CA300)
98.00 MHz (XR-CA320/CA320X)
Output level : 70 dB (3.2 mV)
Mode : stereo
Modulation : main: 1 kHz, 20 kHz deviation (26.7%)
sub: 1 kHz, 20 kHz deviation (26.7%)
19 kHz pilot: 7.5 kHz deviation (10%)

Procedure:

FM Stereo signal generator output channel	Level meter connection	Level meter reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RV2 on TU100 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV2 on TU100 for minimum reading.

L-CH Stereo separation: Ⓐ-Ⓑ
R-CH Stereo separation: Ⓒ-Ⓓ
The separations of both channels should be equal.

Specified Value: Separation more than 30 dB

Adjustment Location: See page 17.

AM Auto Seek/Stop Level Adjustmant

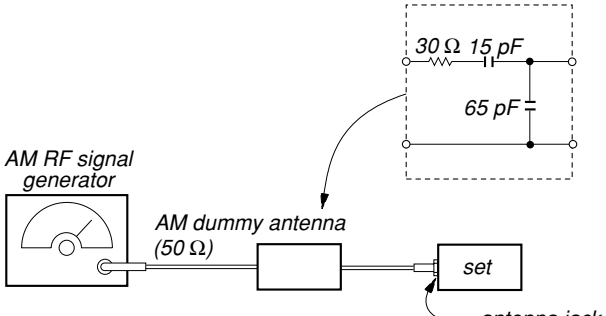
Make this adjustment after "FM Auto Seek/Stop Level Adjustment".

Setting:

SOURCE button: AM

FREQUENCY SELECT switch: AM 9 k

(XR-CA320/CA320X only)



Carrier frequency : 1000 kHz (XR-CA300)
999 kHz (XR-CA320/CA320X)
30% amplitude modulation by 1 kHz signal
Output level : 33 dB (44.7 µV)

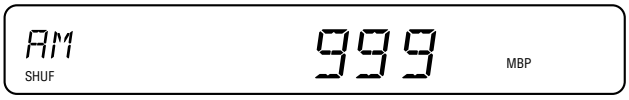
Procedure:

1. Set to the test mode. (see page 13)
2. Push the SOURCE button and set to FM.
3. Push the MODE button and set to AM.

Display

(XR-CA300)

(XR-CA320/CA320X)

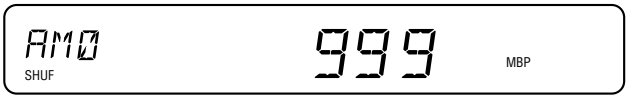


4. Adjust with the volume RV1 on TU100 so that the "AM" indication turns to "AM0" indication on the display window. But, in case of already indicated "AM0", turn the RV1 so that put out light "0" indication and adjustment.

Display

(XR-CA300)

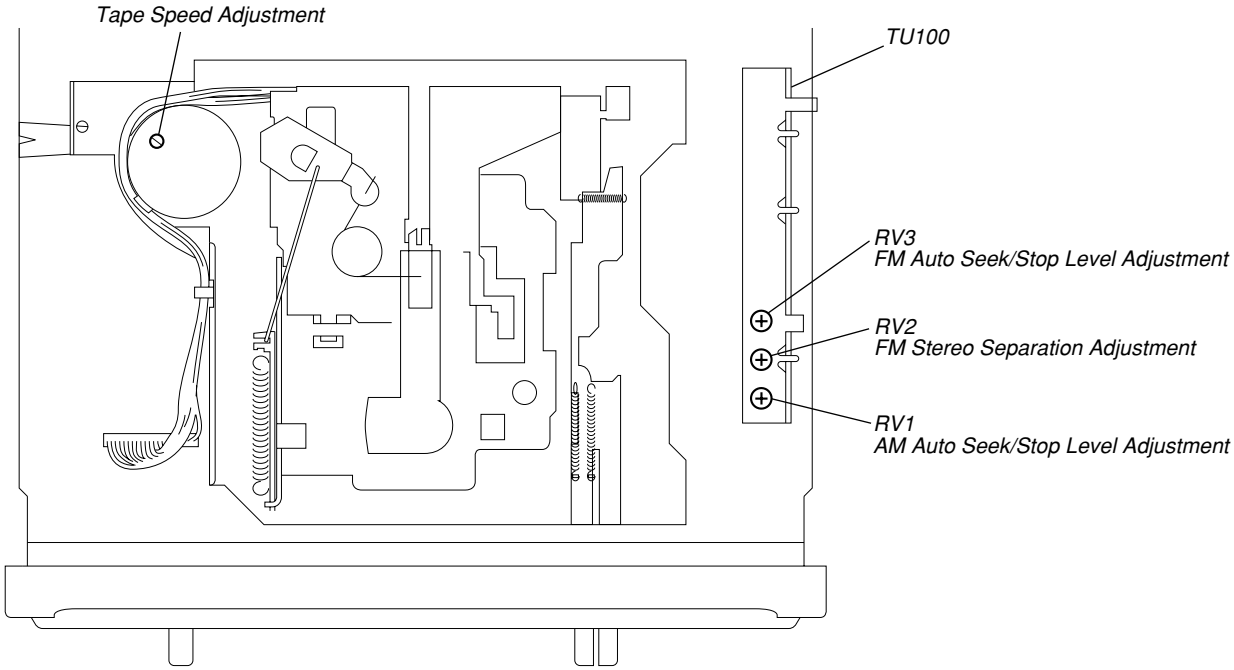
(XR-CA320/CA320X)



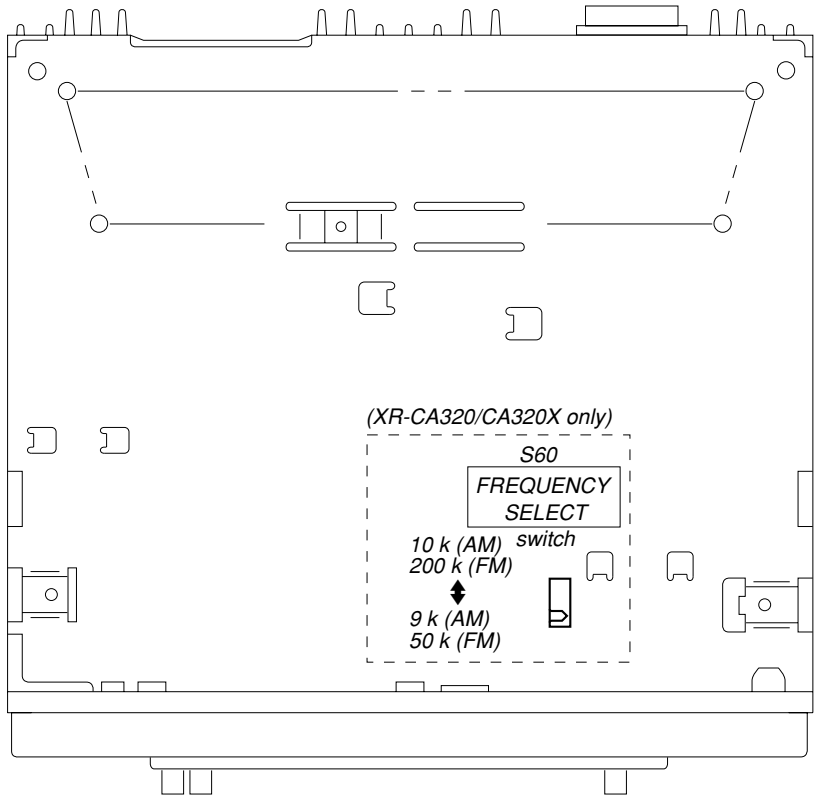
Adjustment Location: See page 17.

Adjustment Location:

– SET UPPER VIEW –



– SET BOTTOM VIEW –



SECTION 5
DIAGRAMS

5-1. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note on Printed Wiring Board:

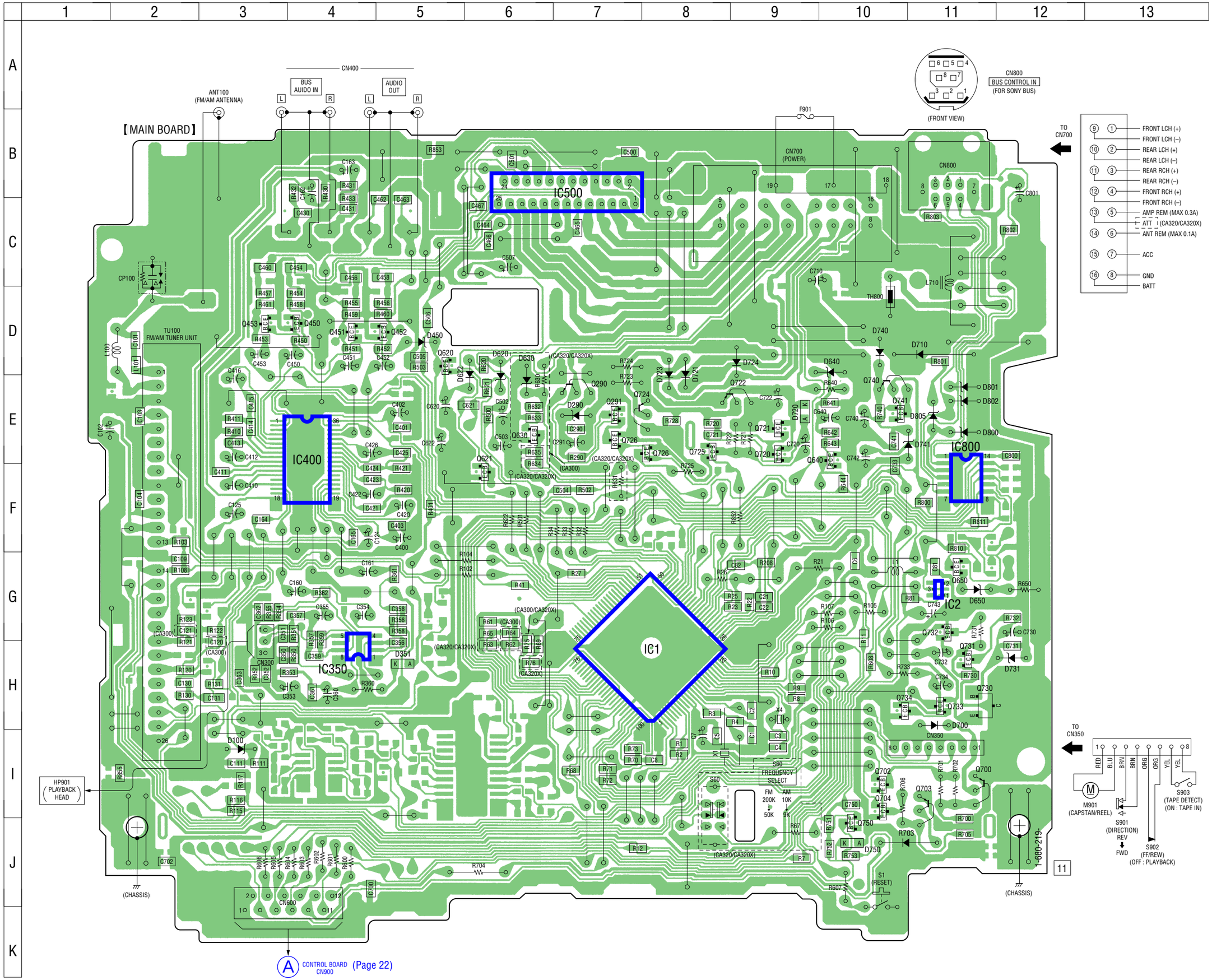
- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ● : Through hole.
- ▬ : Pattern from the side which enables seeing.
- – – – – : Carbon pattern.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

Note on Schematic Diagram:

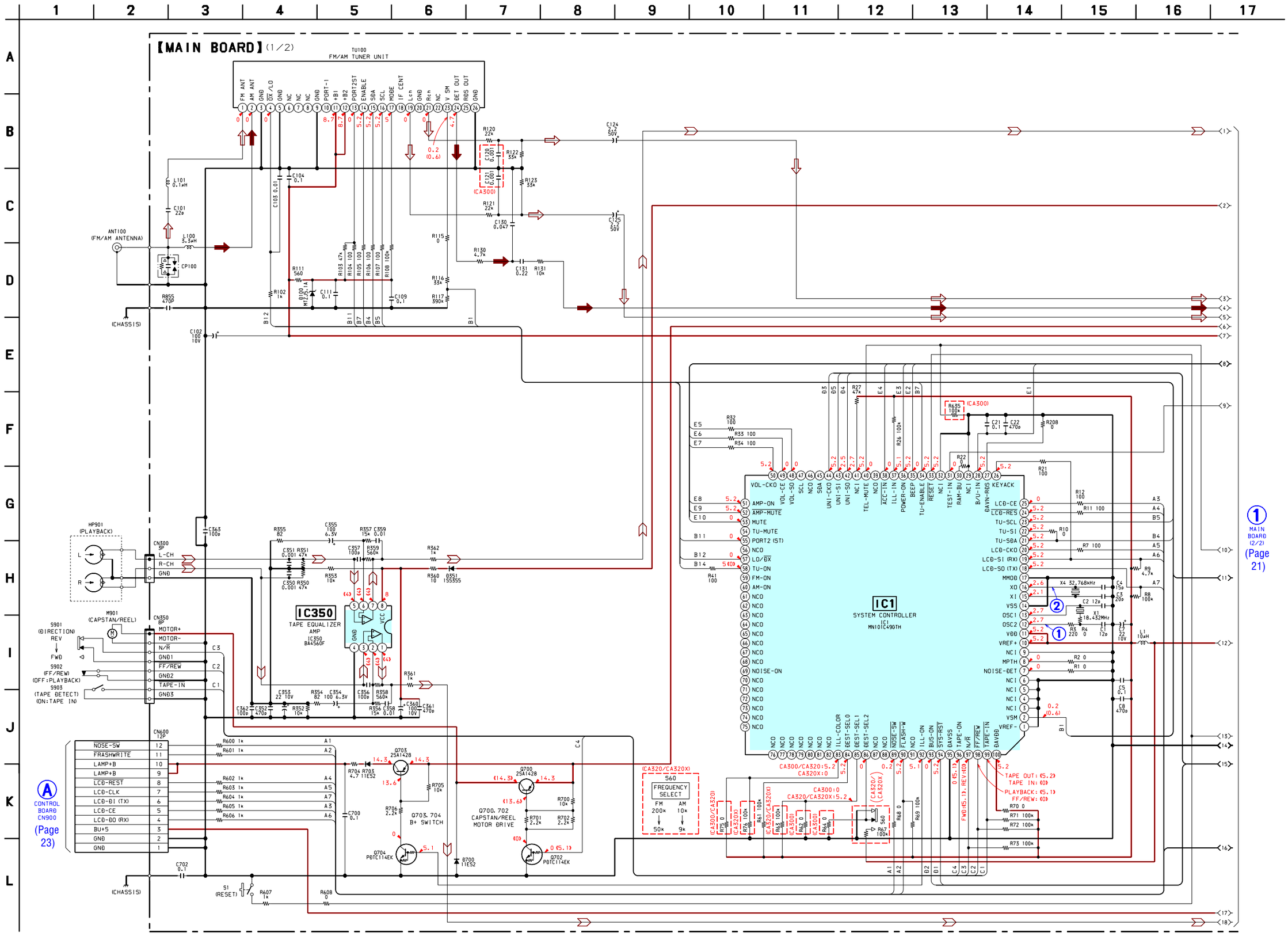
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- ▭ : panel designation.
- ▬ : B+ Line.
- ▭ : adjustment for repair.
- Power voltage is dc 14.4V and fed with regulated dc power supply from ACC and BATT cords.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM
  ( ) : AM
  ⟨⟨ ⟩⟩ : TAPE PLAYBACK
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM
  ➡ : AM
  ⇨ : TAPE PLAYBACK
  ⇨ : BUS AUDIO IN



- **Semiconductor Location**

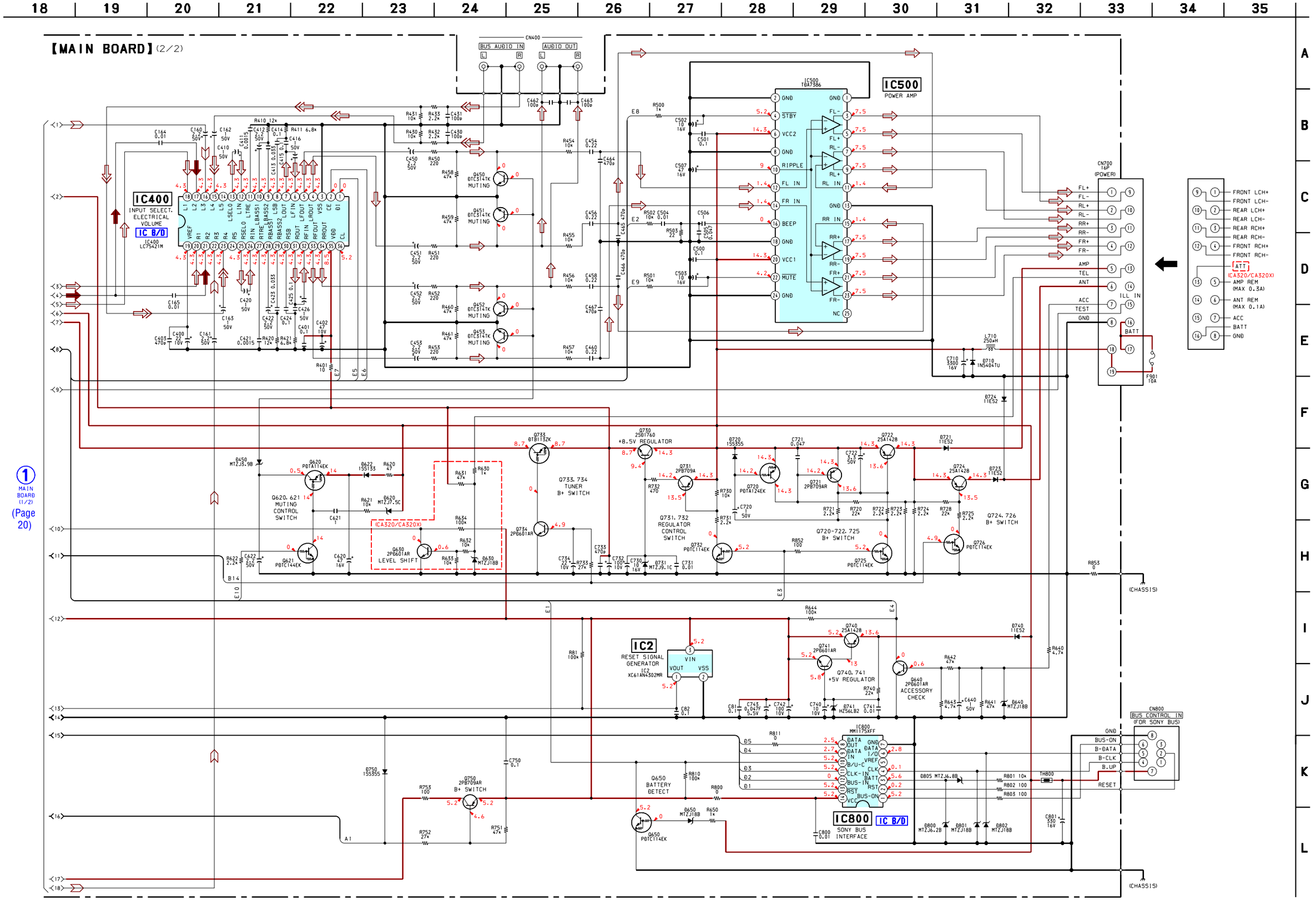
Ref. No.	Location
D100	I-3
D351	H-5
D450	D-5
D620	E-6
D622	E-6
D630	E-6
D640	D-10
D650	G-11
D700	H-11
D710	D-11
D720	E-9
D721	D-8
D723	D-8
D724	D-9
D731	H-12
D740	D-10
D741	E-10
D750	J-10
D800	E-11
D801	E-11
D802	E-11
D805	E-11
IC1	H-8
IC2	G-11
IC350	H-4
IC400	E-4
IC500	B-7
IC800	F-11
Q450	D-4
Q451	D-4
Q452	D-5
Q453	D-3
Q620	D-5
Q621	F-6
Q630	E-6
Q640	E-10
Q650	G-11
Q700	I-11
Q702	I-10
Q703	I-11
Q704	I-10
Q720	E-9
Q721	E-9
Q722	E-9
Q724	E-8
Q725	E-8
Q726	E-8
Q730	H-11
Q731	H-11
Q732	G-11
Q733	H-11
Q734	H-10
Q740	E-10
Q741	E-10
Q750	J-10
R703	J-10

5-3. SCHEMATIC DIAGRAM – MAIN Board (1/2) – • See page 24 for Waveforms.

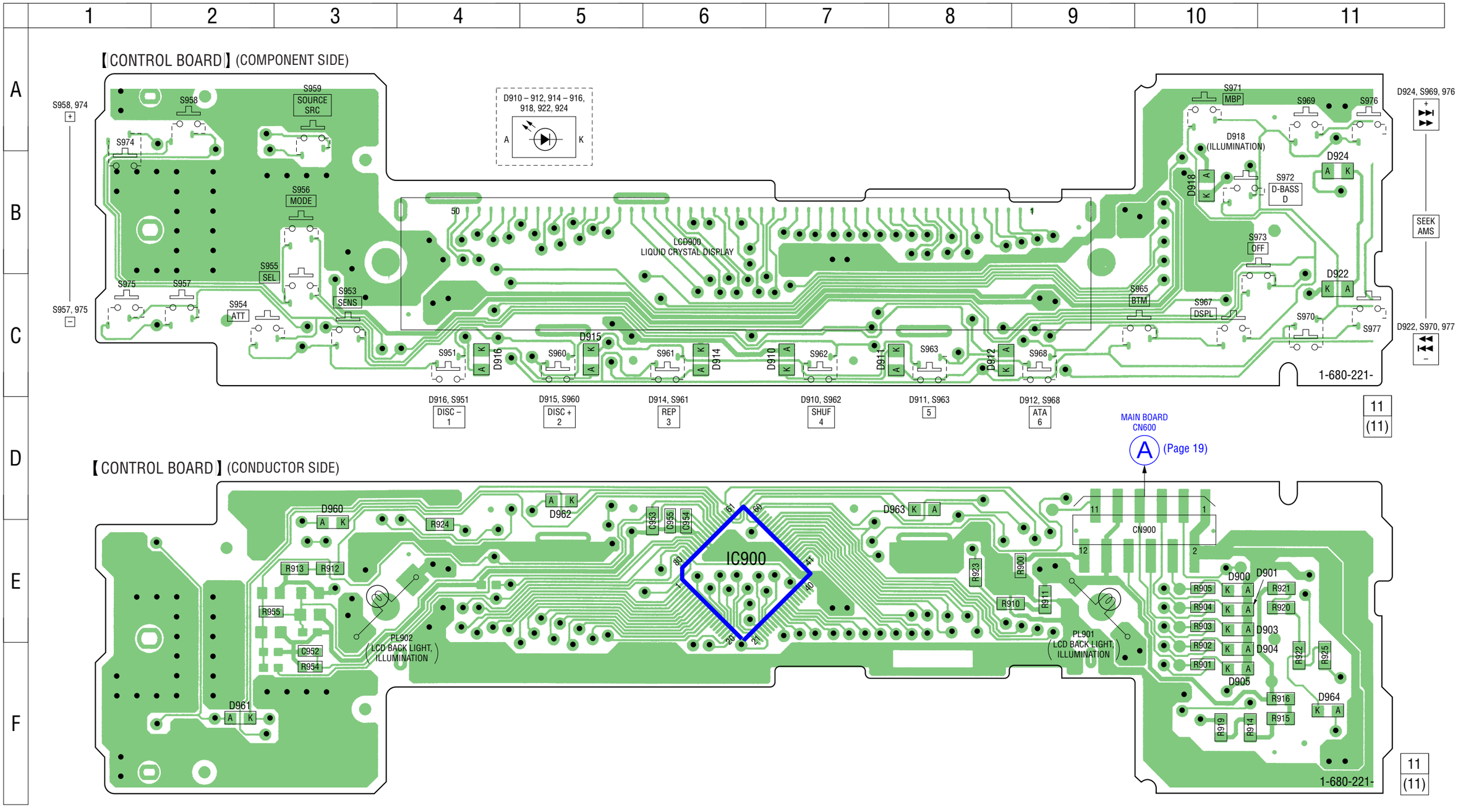


5-4. SCHEMATIC DIAGRAM – MAIN Board (2/2) –

• See page 24 for IC Block Diagrams.



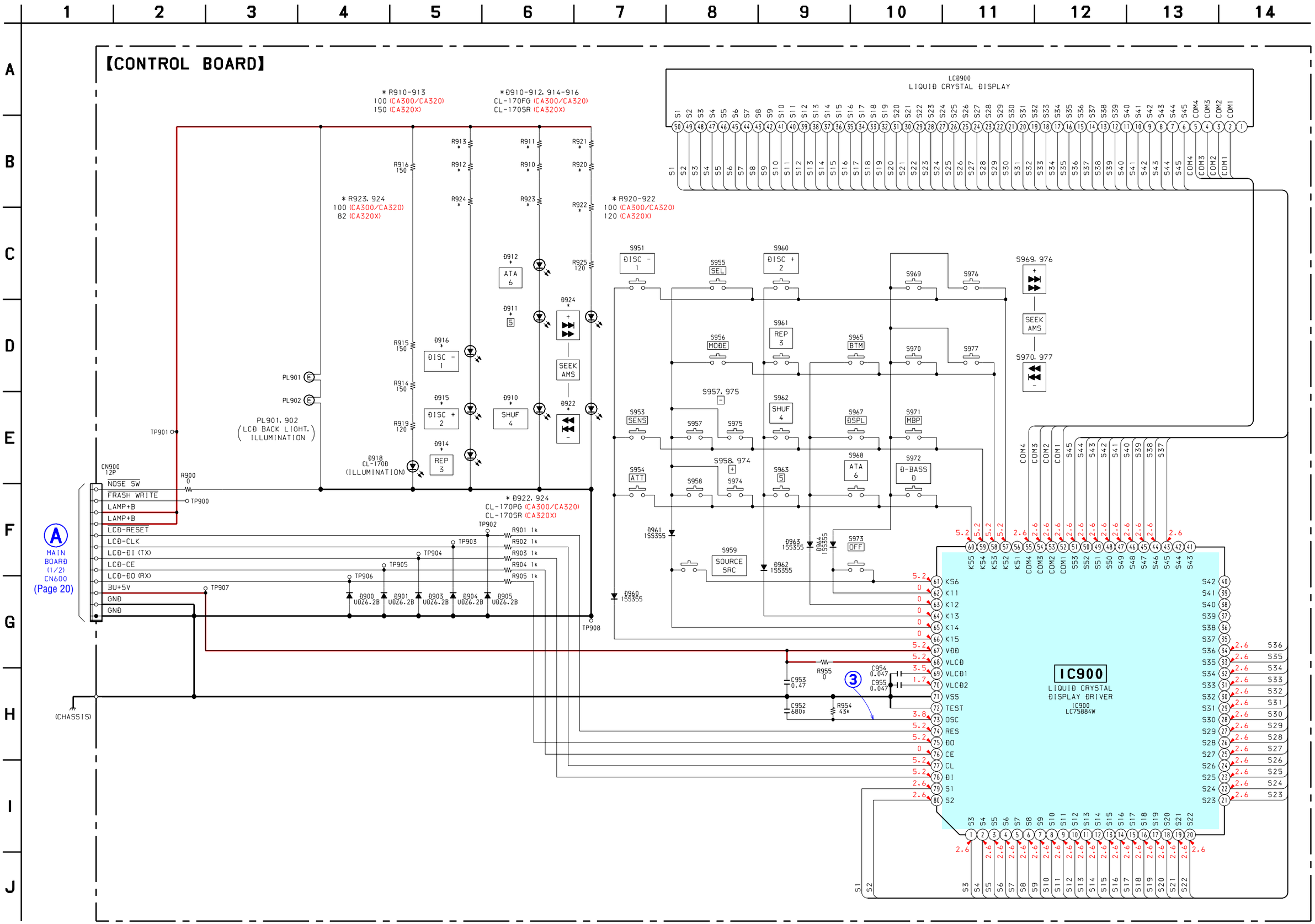
5-5. PRINTED WIRING BOARD – CONTROL Board –



- **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D900	E-10	D918	B-10
D901	E-10	D922	C-11
D903	E-10	D924	B-11
D904	F-10	D960	E-3
D905	F-10	D961	F-2
D910	C-7	D962	D-5
D911	C-8	D963	D-8
D912	C-8	D964	F-11
D914	C-6		
D915	C-5	IC900	E-6
D916	C-4		

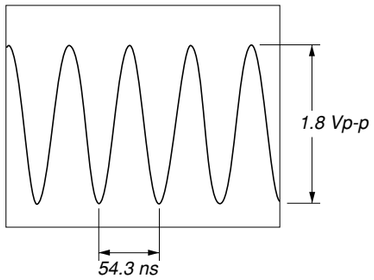
5-6. SCHEMATIC DIAGRAM – CONTROL Board – • See page 24 for Waveform.



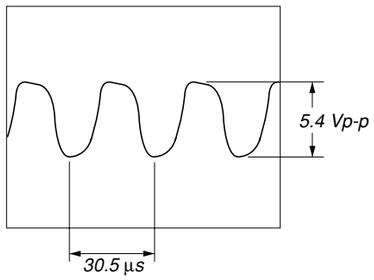
• **Waveforms**

– MAIN Board –

❶ IC1 ⑫ (OSC2)

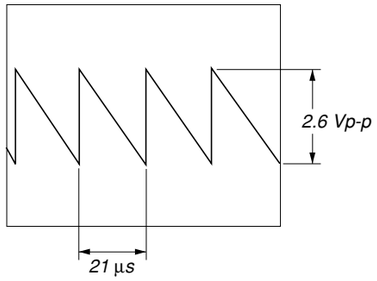


❷ IC1 ⑯ (XO)



– CONTROL Board –

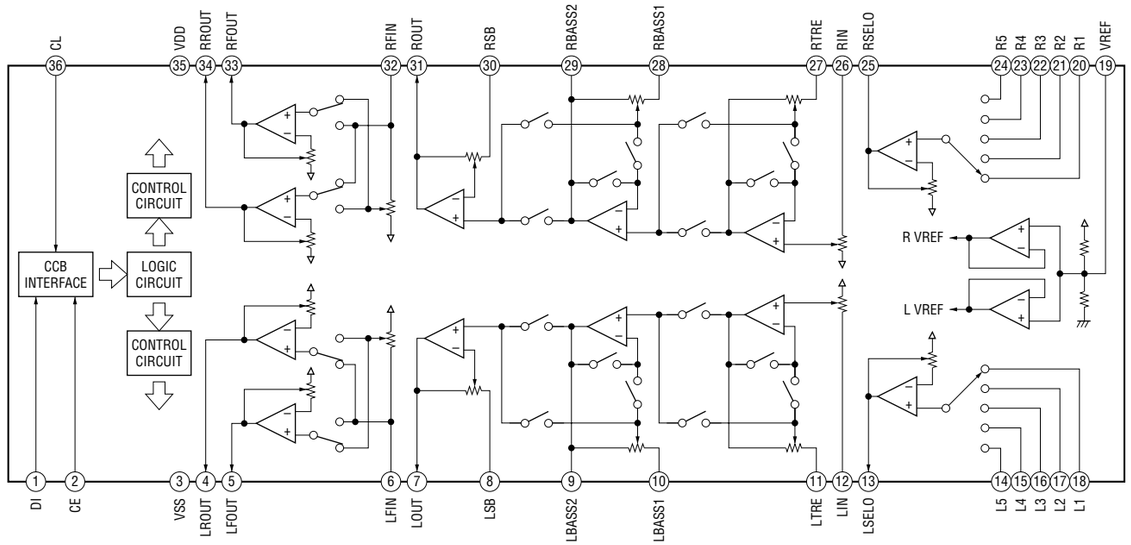
❸ IC900 ㉝ (OSC)



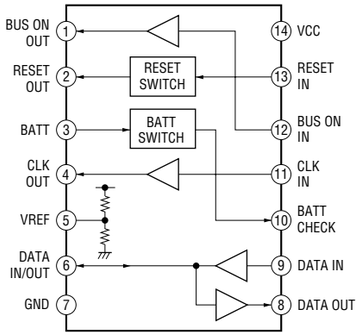
• **IC Block Diagrams**

– MAIN Board –

IC400 LC75421M-TLM



IC800 MM1175XFF



5-7. IC PIN FUNCTION DESCRIPTION

• MAIN BOARD IC1 MN101C49GTH (SYSTEM CONTROLLER)

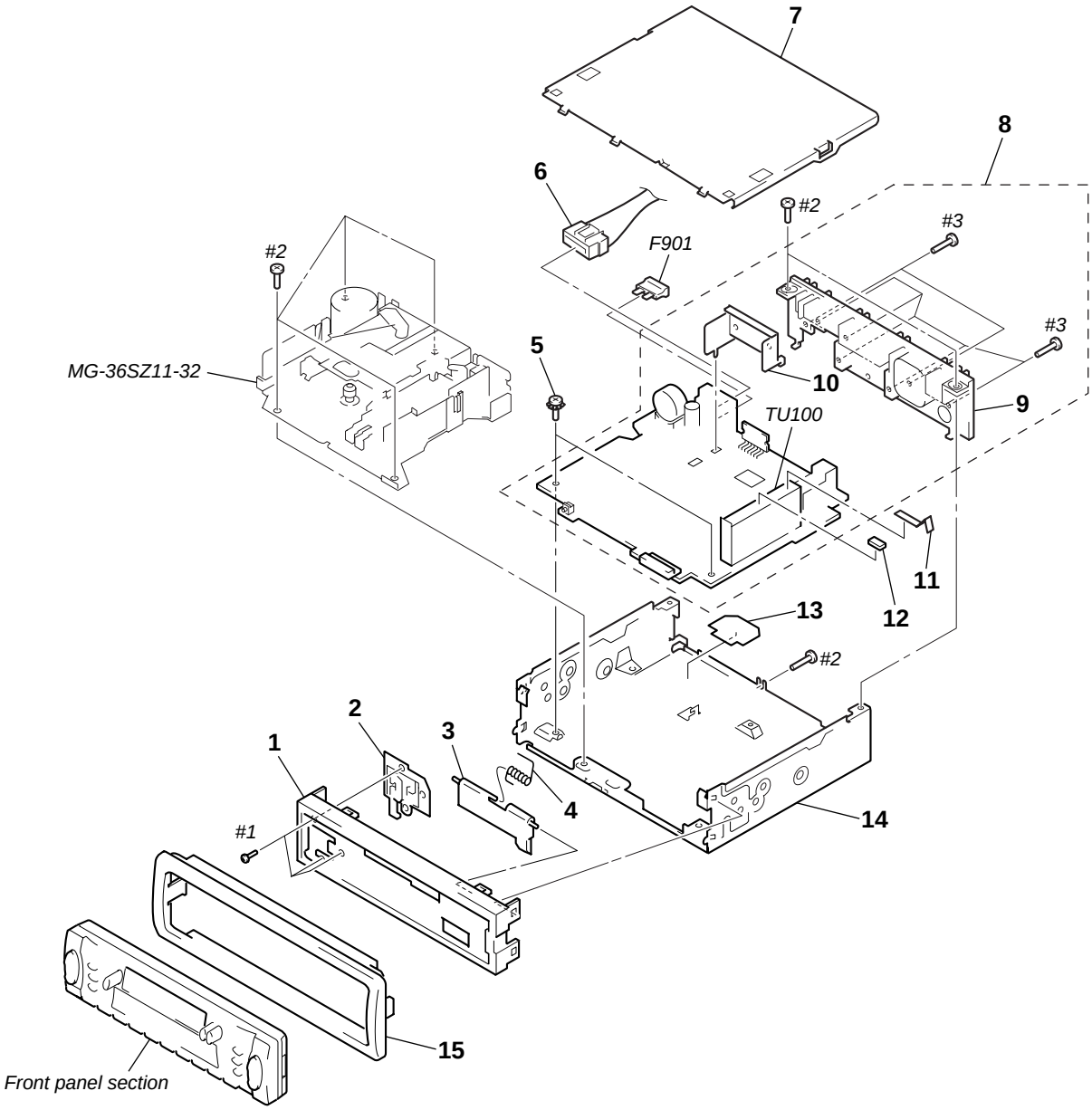
Pin No.	Pin Name	I/O	Description
1	VREF –	—	Reference voltage (0V) terminal (for A/D converter)
2	VSM	I	FM and AM signal meter voltage detection input from the FM/AM tuner unit (TU100) (A/D input)
3 to 6	NCI	I	Not used (fixed at "L")
7	NOISE-DET	I	Not used (fixed at "L")
8	MPTH	I	Not used (fixed at "L")
9	NCI	I	Not used (fixed at "L")
10	VREF +	—	Reference voltage (+5V) terminal (for A/D converter)
11	VDD	—	Power supply terminal (+5V)
12	OSC2	O	Main system clock output terminal (18.432MHz)
13	OSC1	I	Main system clock input terminal (18.432MHz)
14	VSS	—	Ground terminal
15	XI	I	Sub system clock input terminal (32.768kHz)
16	XO	O	Sub system clock output terminal (32.768kHz)
17	MMOD	I	Setting terminal for the single chip mode "L": single chip
18	LCD-SO (TX)	O	LCD serial data output to the liquid crystal display driver (IC900)
19	LCD-SI (RX)	I	LCD serial data input from the liquid crystal display driver (IC900)
20	LCD-CKO	O	LCD serial transfer clock signal output to the liquid crystal display driver (IC900)
21	TU-SDA	O	Serial data output to the FM/AM tuner unit (TU100)
22	TU-SI	I	Serial data input from the FM/AM tuner unit (TU100)
23	TU-SCL	O	Serial data transfer clock signal output to the FM/AM tuner unit (TU100)
24	$\overline{\text{LCD-RES}}$	O	LCD reset signal output to the liquid crystal display driver (IC900) "L": reset
25	LCD-CE	O	Chip enable signal output to the liquid crystal display driver (IC900) "H" active
26	KEYACK	I	Key acknowledge signal detect input from the liquid crystal display driver (IC900)
27	DAVN-RDS	I	Not used (fixed at "L")
28	B/U-IN	I	Battery detect signal input from the SONY bus interface (IC800) and battery detect circuit "L" is input at low voltage
29	NCI	I	Not used (fixed at "L")
30	RAM BU	I	Internal RAM reset detection signal input terminal Input terminal to check that RAM data are not destroyed due to low voltage This checking is made within 100 msec after reset "L": RAM reset
31	TEST-IN	I	Setting terminal for the test mode "L": test mode, Normally: fixed at "H"
32	NCI	I	Not used (fixed at "L")
33	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator (IC2) and reset switch (S1) "L": reset "L" is input for several 100 msec after power on, then it changes to "H"
34	TU-ENABLE	O	Chip enable signal output to the FM/AM tuner unit (TU100) "H" active
35	BEEP	O	Beep sound drive signal output to the power amp (IC500)
36	POWER-ON	O	Main system power supply on/off control signal output terminal "H": power on
37	ILL-IN	I	Not used (fixed at "H")
38	$\overline{\text{ACC-IN}}$	I	Accessory detect signal input terminal "L": accessory on
39	NCO	O	Not used (open)
40	TEL-MUTE	I	Telephone muting signal input terminal At input of "H", the signal is attenuated by –20 dB Used for the XR-CA320/CA320X only
41	NCI	I	Not used (fixed at "H")
42	UNI-SO	O	Serial data output to the SONY bus interface (IC800)
43	UNI-SI	I	Serial data input from the SONY bus interface (IC800)

Pin No.	Pin Name	I/O	Description
44	UNI-CKO	O	Serial data transfer clock signal output to the SONY bus interface (IC800)
45	SDA	I/O	Not used (open)
46	NCO	O	Not used (open)
47	SCL	O	Not used (open)
48	VOL-SO	O	Serial data output to the electrical volume (IC400)
49	VOL-CE	O	Chip enable signal output to the electrical volume (IC400) "H" active
50	VOL-CKO	O	Serial data transfer clock signal output to the electrical volume (IC400)
51	AMP-ON	O	Standby on/off control signal output to the power amp (IC500) "L": standby mode, "H": amp on
52	$\overline{\text{AMP-MUTE}}$	O	Muting on/off control signal output to the power amp (IC500) "L": muting on
53	MUTE	O	Audio line muting on/off control signal output terminal "H": muting on
54	TU-MUTE	O	Not used (open)
55	PORT2 (ST)	I	FM stereo broadcasting detection signal input from the FM/AM tuner unit (TU100) "H": stereo display lighting
56	NCO	O	Not used (open)
57	LO/$\overline{\text{DX}}$	O	Local/DX control signal output to the FM/AM tuner unit (TU100) "L": DX
58	TU-ON	O	Tuner system power supply on/off control signal output terminal "H": tuner power on
59	FM-ON	O	FM system power supply on/off control signal output terminal "L": AM power on, "H": FM power on Not used (open)
60	AM-ON	O	AM system power supply on/off control signal output terminal "L": FM power on, "H": AM power on Not used (open)
61 to 68	NCO	O	Not used (open)
69	NOISE-ON	O	Not used (open)
70 to 82	NCO	O	Not used (open)
83	ILL-COLOR	I	Illumination color select input terminal "L": amber illumination "H": green illumination
84	DEST-SEL0	I	Destination setting terminal (fixed at "H")
85	DEST-SEL1	I	Destination setting terminal XR-CA300: fixed at "L", XR-CA320/CA320X: fixed at "H"
86	DEST-SEL2	I	Destination setting terminal XR-CA300: fixed at "L", XR-CA320/CA320X: input for the FREQUENCY SELECT switch (S60)
87, 88	NCO	O	Not used (open)
89	$\overline{\text{NOSE-SW}}$	I	Front panel block remove/attach detection signal input terminal "L": front panel is attached
90	$\overline{\text{FLASH-W}}$	I	Internal flash memory data write mode detection signal input terminal "L": data write mode, Normally: fixed at "H"
91	NCO	O	Not used (open)
92	ILL-ON	O	Power on/off control signal output of the illumination LED and LCD back light (PL901, 902) "H": power on
93	BUS-ON	O	Bus on/off control signal output to the SONY bus interface (IC800) "L": bus on
94	$\overline{\text{SYS-RST}}$	O	Reset signal output to the SONY bus interface (IC800) "L": reset
95	DAVSS	—	Ground terminal (for D/A converter)
96	TAPE-ON	O	Capstan/reel motor (M901) drive signal output terminal "H": motor on
97	N/$\overline{\text{R}}$	I	Tape direction switch (S903) input terminal "L": reverse direction "H": forward direction
98	$\overline{\text{FF/REW}}$	I	FF/REW detection switch (S902) input terminal "L": FF/REW mode
99	$\overline{\text{TAPE-IN}}$	I	Tape in detection switch (S903) input terminal "L": tape in
100	DAVDD	—	Power supply terminal (+5V) (for D/A converter)

SECTION 6
EXPLODED VIEWS

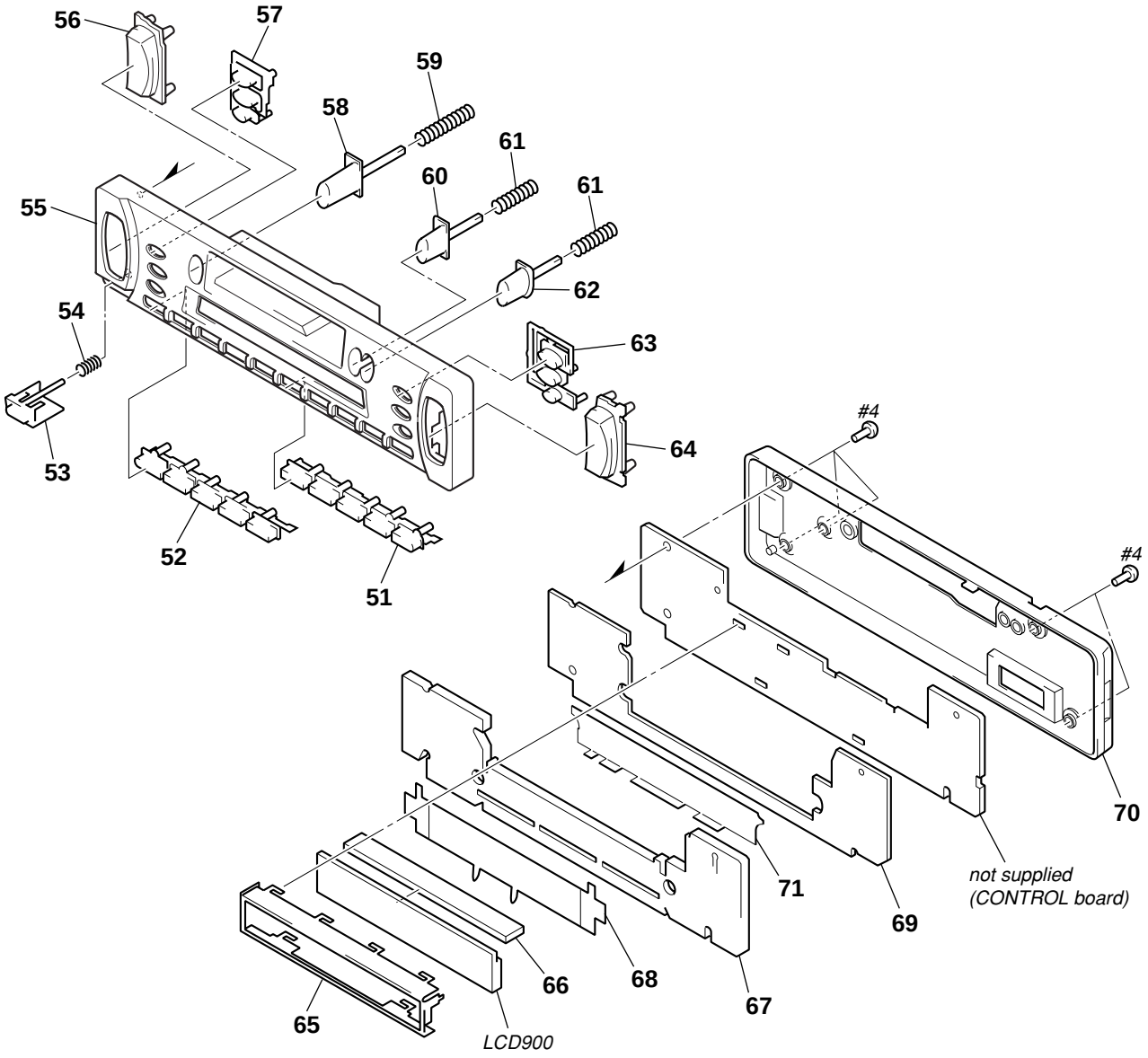
NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and Accessories and packing materials are given in the last of the electrical parts list.

6-1. GENERAL SECTION



Ref. No.	Part No.	Description	Remark
1	3-224-905-01	PANEL, SUB	
2	X-3370-437-1	LOCK ASSY	
3	3-041-581-11	DOOR, CASSETTE	
4	3-044-125-01	SPRING, TORSION	
5	3-376-464-11	SCREW (+PTT 2.6X6), GROUND POINT	
6	1-776-207-31	CORD (WITH CONNECTOR) (POWER) (CA300)	
6	1-783-736-61	CORD (WITH CONNECTOR) (POWER) (CA320/CA320X)	
* 7	X-3378-167-1	COVER ASSY, TOP	
* 8	A-3326-859-A	MAIN BOARD, COMPLETE (CA300)	
* 8	A-3326-884-A	MAIN BOARD, COMPLETE (CA320X)	
* 8	A-3326-962-A	MAIN BOARD, COMPLETE (CA320)	
* 9	3-224-921-01	HEAT SINK	
* 10	3-041-578-01	BRACKET (IC)	
11	3-937-650-01	PLATE (C), GROUND	
12	3-046-339-01	CUSHION (U)	
* 13	3-232-738-01	SHEET, INSULATING	
* 14	3-256-389-01	CHASSIS	
15	3-041-599-01	COLLAR	
F901	1-532-877-11	FUSE (BLADE TYPE) (AUTO FUSE) (10A)	
TU100	1-693-524-11	FM/AM TUNER UNIT (FAE370-A01)	

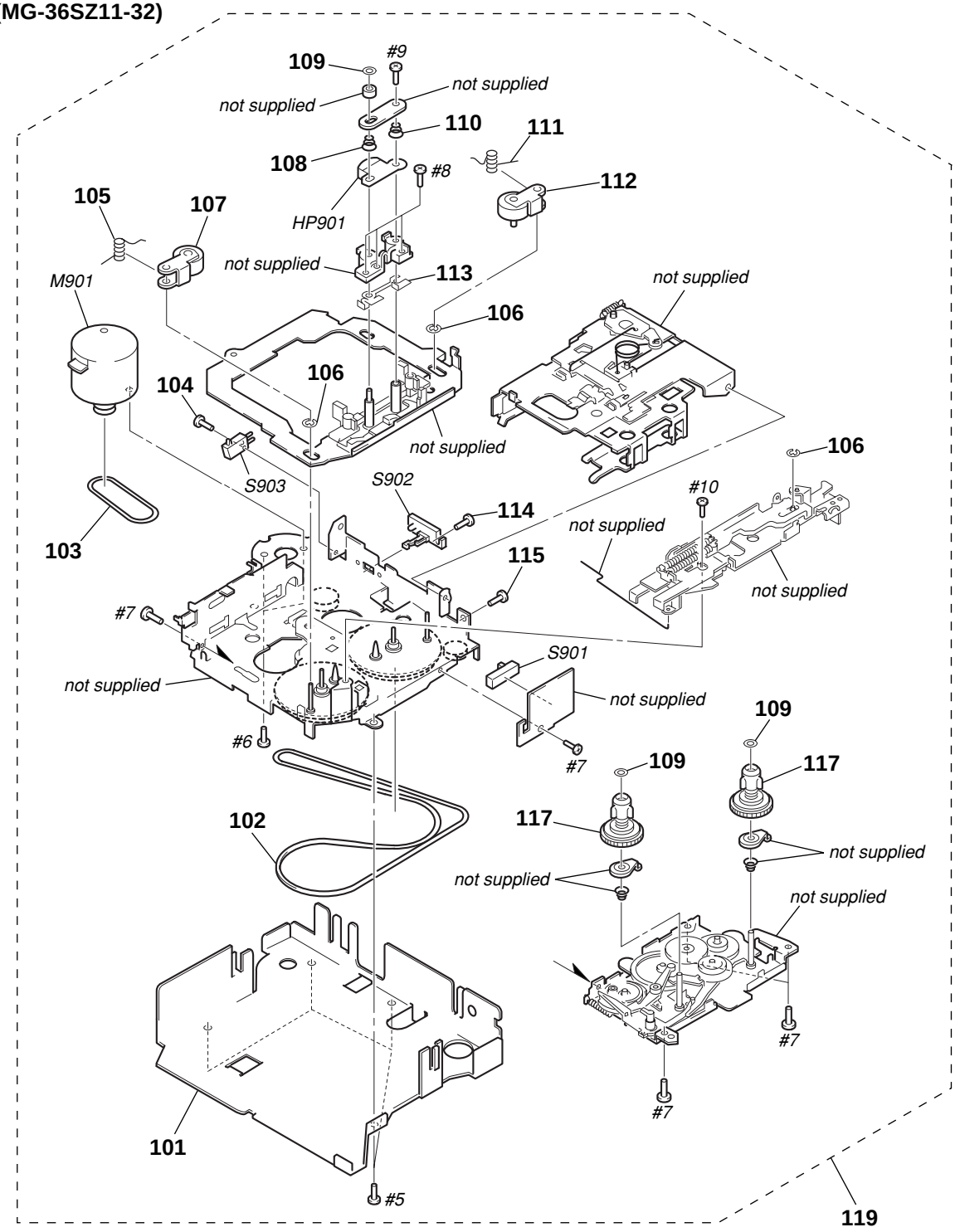
6-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	3-224-928-01	BUTTON (4-6) (4. 5. 6. BTM. DSPL)	
52	3-224-912-01	BUTTON (1-3) (ATT. SENS. 1. 2. 3)	
53	3-224-913-01	BUTTON (RELEASE)	
54	3-220-522-01	SPRING (RELEASE)	
55	3-224-911-01	PANEL, FRONT (CA300)	
55	3-224-911-11	PANEL, FRONT (CA320X)	
55	3-224-911-21	PANEL, FRONT (CA320)	
56	3-224-930-01	BUTTON (+/-) (CA300/CA320)	
56	3-224-930-11	BUTTON (+/-) (CA320X)	
57	3-224-908-01	BUTTON (SOURCE) (SRC. MODE. SEL)	
58	3-224-917-01	BUTTON (EJECT) (⏏)	
59	3-029-327-01	SPRING (EJECT)	
60	3-224-916-01	BUTTON (REW) (◀◀)	

Ref. No.	Part No.	Description	Remark
61	3-375-372-01	SPRING (F/R)	
62	3-224-915-01	BUTTON (FF) (▶▶)	
63	3-224-907-01	BUTTON (D-BASS) (MBP. D. OFF)	
64	3-224-929-01	BUTTON (SEEK) (+ ▶▶I ▶▶ SEEK AMS ◀◀ I◀◀ -)	
* 65	3-224-927-01	PLATE (LCD), GROUND	
66	1-694-696-31	CONDUCTIVE BOARD, CONNECTION	
* 67	3-224-926-01	ILLUMINATOR	
* 68	3-224-931-01	PLATE, LIGHT GUIDE	
69	1-786-099-11	SWITCH, SHEET	
70	3-224-904-01	PANEL, FRONT BACK	
* 71	3-227-319-01	SHEET (REFLECTROR)	
LCD900	1-804-512-11	DISPLAY PANEL, LIQUID CRYSTAL	

6-3. MECHANISM DECK SECTION (MG-36SZ11-32)



Ref. No.	Part No.	Description	Remark
* 101	3-224-920-01	BRACKET (MD)	
102	3-045-943-01	MAIN BELT	
103	3-045-945-01	SUB BELT (C)	
104	3-045-953-01	+MACHINE SCREW M1.7X6	
105	3-045-940-01	PINCH ARM SPG (R)	
106	3-045-950-01	E-RING (DIA. 2)	
107	3-045-890-01	PINCH ARM (R)	
108	3-045-933-01	ADJUSTER ARM SPG (B)	
109	3-045-949-01	PSW (REEL) B	
110	3-045-932-01	ADJUSTER ARM SPG (A)	
111	3-045-939-01	PINCH ARM SPG (F)	
112	3-045-891-01	PINCH ARM (F)	
113	3-045-906-01	ADJUSTER SHIM (X)	
114	3-045-952-01	+MACHINE SCREW M1.7X4	
115	3-713-786-51	SCREW +P 2X3	
117	3-045-893-01	REEL SPINDLE	
119	A-3220-826-A	MECHANISM DECK ASSY (MG-36SZ11-32)	
HP901	1-500-661-11	HEAD (PLAYBACK)	
M901	1-763-507-11	MOTOR (CAPSTAN/REEL)	
S901	1-771-928-11	SWITCH (SLIDE) (DIRECTION)	
S902	1-771-926-11	SWITCH (LEAF) (FF/REW)	
S903	1-771-927-11	SWITCH (LEAF) (TAPE DETECT)	

SECTION 7
ELECTRICAL PARTS LIST

CONTROL

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
		CONTROL BOARD	
		**********	
	1-694-696-31	CONDUCTIVE BOARD, CONNECTION	
	1-786-099-11	SWITCH, SHEET	
*	3-224-926-01	ILLUMINATOR	
*	3-224-927-01	PLATE (LCD), GROUND	
*	3-224-931-01	PLATE, LIGHT GUIDE	
*	3-227-319-01	SHEET (REFLECTOR)	
		< CAPACITOR >	
C952	1-115-412-11	CERAMIC CHIP 680PF 5% 25V	
C953	1-125-891-11	CERAMIC CHIP 0.47uF 10% 10V	
C954	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C955	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
		< CONNECTOR >	
CN900	1-794-312-11	PIN, CONNECTOR 12P	
		< DIODE >	
D900	8-719-056-82	DIODE UDZ-TE-17-6.2B	
D901	8-719-056-82	DIODE UDZ-TE-17-6.2B	
D903	8-719-056-82	DIODE UDZ-TE-17-6.2B	
D904	8-719-056-82	DIODE UDZ-TE-17-6.2B	
D905	8-719-056-82	DIODE UDZ-TE-17-6.2B	
D910	8-719-078-39	LED CL-170SR-CD-T (4, SHUF) (CA320X)	
D910	8-719-082-98	LED CL-170FG-CD-T (4, SHUF)	(CA300/CA320)
D911	8-719-078-39	LED CL-170SR-CD-T (5) (CA320X)	
D911	8-719-082-98	LED CL-170FG-CD-T (5) (CA300/CA320)	
D912	8-719-078-39	LED CL-170SR-CD-T (6, ATA) (CA320X)	
D912	8-719-082-98	LED CL-170FG-CD-T (6, ATA) (CA300/CA320)	
D914	8-719-078-39	LED CL-170SR-CD-T (3, REP) (CA320X)	
D914	8-719-082-98	LED CL-170FG-CD-T (3, REP) (CA300/CA320)	
D915	8-719-078-39	LED CL-170SR-CD-T (2, DISC +) (CA320X)	
D915	8-719-082-98	LED CL-170FG-CD-T (2, DISC +)	(CA300/CA320)
D916	8-719-078-39	LED CL-170SR-CD-T (1, DISC -) (CA320X)	
D916	8-719-082-98	LED CL-170FG-CD-T (1, DISC -)	(CA300/CA320)
D918	8-719-033-86	LED CL-170D-CD-T (ILLUMINATION)	
D922	8-719-033-14	LED CL-170PG-CD-T	(◀◀ I◀◀ -, SEEK AMS) (CA300/CA320)
D922	8-719-078-39	LED CL-170SR-CD-T	(◀◀ I◀◀ -, SEEK AMS) (CA320X)
D924	8-719-033-14	LED CL-170PG-CD-T	(+▶▶I ▶▶, SEEK AMS) (CA300/CA320)
D924	8-719-078-39	LED CL-170SR-CD-T	(+▶▶I ▶▶, SEEK AMS) (CA320X)
D960	8-719-988-61	DIODE 1SS355TE-17	
D961	8-719-988-61	DIODE 1SS355TE-17	
D962	8-719-988-61	DIODE 1SS355TE-17	
D963	8-719-988-61	DIODE 1SS355TE-17	
D964	8-719-988-61	DIODE 1SS355TE-17	
		< IC >	
IC900	8-759-657-06	IC LC75884W	
		< LIQUID CRYSTAL DISPLAY >	
LCD900	1-804-512-11	DISPLAY PANEL, LIQUID CRYSTAL	
		< PILOT LAMP >	
PL901	1-518-743-11	LAMP, PILOT (LCD BACK LIGHT, ILLUMINATION) (CA320X)	
PL901	1-518-743-31	LAMP, PILOT (LCD BACK LIGHT, ILLUMINATION) (CA300/CA320)	
PL902	1-518-743-11	LAMP, PILOT (LCD BACK LIGHT, ILLUMINATION) (CA320X)	
PL902	1-518-743-31	LAMP, PILOT (LCD BACK LIGHT, ILLUMINATION) (CA300/CA320)	
		< RESISTOR >	
R900	1-216-295-11	SHORT 0	
R901	1-216-049-11	RES-CHIP 1K 5% 1/10W	
R902	1-216-049-11	RES-CHIP 1K 5% 1/10W	
R903	1-216-049-11	RES-CHIP 1K 5% 1/10W	
R904	1-216-049-11	RES-CHIP 1K 5% 1/10W	
R905	1-216-049-11	RES-CHIP 1K 5% 1/10W	
R910	1-216-025-11	RES-CHIP 100 5% 1/10W	(CA300/CA320)
R910	1-216-029-00	METAL CHIP 150 5% 1/10W	(CA320X)
R911	1-216-025-11	RES-CHIP 100 5% 1/10W	(CA300/CA320)
R911	1-216-029-00	METAL CHIP 150 5% 1/10W	(CA320X)
R912	1-216-025-11	RES-CHIP 100 5% 1/10W	(CA300/CA320)

Ref. No.	Part No.	Description			Remark
R912	1-216-029-00	METAL CHIP	150	5%	1/10W (CA320X)
R913	1-216-025-11	RES-CHIP	100	5%	1/10W (CA300/CA320)
R913	1-216-029-00	METAL CHIP	150	5%	1/10W (CA320X)
R914	1-216-029-00	METAL CHIP	150	5%	1/10W
R915	1-216-029-00	METAL CHIP	150	5%	1/10W
R916	1-216-029-00	METAL CHIP	150	5%	1/10W
R919	1-216-027-00	METAL CHIP	120	5%	1/10W
R920	1-216-025-11	RES-CHIP	100	5%	1/10W (CA300/CA320)
R920	1-216-027-00	METAL CHIP	120	5%	1/10W (CA320X)
R921	1-216-025-11	RES-CHIP	100	5%	1/10W (CA300/CA320)
R921	1-216-027-00	METAL CHIP	120	5%	1/10W (CA320X)
R922	1-216-025-11	RES-CHIP	100	5%	1/10W (CA300/CA320)
R922	1-216-027-00	METAL CHIP	120	5%	1/10W (CA320X)
R923	1-216-023-00	METAL CHIP	82	5%	1/10W (CA320X)
R923	1-216-025-11	RES-CHIP	100	5%	1/10W (CA300/CA320)
R924	1-216-023-00	METAL CHIP	82	5%	1/10W (CA320X)
R924	1-216-025-11	RES-CHIP	100	5%	1/10W (CA300/CA320)
R925	1-216-027-00	METAL CHIP	120	5%	1/10W
R954	1-216-088-00	METAL CHIP	43K	5%	1/10W
R955	1-216-295-11	SHORT	0		

****

*	A-3326-859-A	MAIN BOARD, COMPLETE (CA300)	
*	A-3326-884-A	MAIN BOARD, COMPLETE (CA320X)	
*	A-3326-962-A	MAIN BOARD, COMPLETE (CA320)	
		**********	
*	3-041-578-01	BRACKET (IC)	
*	3-224-921-01	HEAT SINK	
	7-685-794-09	SCREW +PTT 2.6X10 (S)	
		< JACK >	
ANT100	1-764-808-21	JACK (ANT) (FM/AM ANTENNA) (CA320)	
ANT100	1-815-185-11	JACK (ANT) (FM/AM ANTENNA) (CA300/CA320X)	
		< CAPACITOR >	

C1	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C2	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C3	1-164-160-11	CERAMIC CHIP	20PF	5%	50V
C4	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C5	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C7	1-124-234-00	ELECT	22uF	20%	16V
C8	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C21	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C22	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C81	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C82	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V

Ref. No.	Part No.	Description			Remark
C101	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C102	1-124-584-00	ELECT	100uF	20%	10V
C103	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C104	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C109	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C111	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C120	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (CA300)
C121	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (CA300)
C124	1-124-257-00	ELECT	2.2uF	20%	50V
C125	1-124-257-00	ELECT	2.2uF	20%	50V
C130	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C131	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C160	1-124-257-00	ELECT	2.2uF	20%	50V
C161	1-124-257-00	ELECT	2.2uF	20%	50V
C162	1-104-942-11	ELECT	1uF	20%	50V
C163	1-104-942-11	ELECT	1uF	20%	50V
C164	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C165	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C350	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C351	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C352	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C353	1-124-234-00	ELECT	22uF	20%	16V
C354	1-124-584-00	ELECT	100uF	20%	10V
C355	1-124-584-00	ELECT	100uF	20%	10V
C356	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C357	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C358	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C359	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C360	1-124-584-00	ELECT	100uF	20%	10V
C361	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C362	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C363	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C400	1-124-234-00	ELECT	22uF	20%	16V
C401	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C402	1-124-589-11	ELECT	47uF	20%	16V
C403	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C410	1-104-942-11	ELECT	1uF	20%	50V
C411	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C412	1-124-257-00	ELECT	2.2uF	20%	50V
C413	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C414	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C415	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C416	1-104-942-11	ELECT	1uF	20%	50V
C420	1-104-942-11	ELECT	1uF	20%	50V
C421	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C422	1-124-257-00	ELECT	2.2uF	20%	50V
C423	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C424	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C425	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C426	1-104-942-11	ELECT	1uF	20%	50V
C430	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C431	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C450	1-124-257-00	ELECT	2.2uF	20%	50V
C451	1-124-257-00	ELECT	2.2uF	20%	50V
C452	1-124-257-00	ELECT	2.2uF	20%	50V
C453	1-124-257-00	ELECT	2.2uF	20%	50V

MAIN

Ref. No.	Part No.	Description			Remark
C454	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C456	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C458	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C460	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C462	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C463	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C464	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C465	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C466	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C467	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C500	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C501	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C502	1-126-157-11	ELECT	10uF	20%	16V
C503	1-126-157-11	ELECT	10uF	20%	16V
C504	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C505	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C506	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C507	1-124-589-11	ELECT	47uF	20%	16V
C620	1-124-589-11	ELECT	47uF	20%	16V
C621	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C622	1-124-257-00	ELECT	2.2uF	20%	50V
C640	1-104-942-11	ELECT	1uF	20%	50V
C700	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C702	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C710	1-126-936-11	ELECT	3300uF	20%	16V
C720	1-104-942-11	ELECT	1uF	20%	50V
C721	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C722	1-126-162-11	ELECT	3.3uF	20%	50V
C730	1-126-157-11	ELECT	10uF	20%	16V
C731	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C732	1-124-584-00	ELECT	100uF	20%	10V
C733	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C734	1-124-234-00	ELECT	22uF	20%	16V
C740	1-126-157-11	ELECT	10uF	20%	16V
C741	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C742	1-124-584-00	ELECT	100uF	20%	10V
C743	1-125-701-11	DOUBLE LAYER	0.047F		5.5V
C750	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C800	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C801	1-126-940-11	ELECT	330uF	20%	16V
		< CONNECTOR >			
* CN300	1-564-705-11	PIN, CONNECTOR (PC BOARD) 3P			
* CN350	1-573-486-11	PIN, CONNECTOR (PC BOARD) 8P			
CN400	1-774-699-12	JACK, PIN 4P (BUS AUDIO IN, AUDIO OUT)			
CN600	1-794-311-11	PLUG, CONNECTOR 12P			
CN700	1-774-701-11	PIN, CONNECTOR 16P (POWER)			
CN800	1-580-907-31	PLUG, CONNECTOR (BUS CONTROL IN)			
		< DISCHARGE GAP >			
CP100	1-519-504-11	GAP, DISCHARGE			
		< DIODE >			
D100	8-719-921-42	DIODE	MTZJ-T-77-5.1A		
D351	8-719-988-61	DIODE	1SS355TE-17		
D450	8-719-109-72	DIODE	MTZJ-T-77-3.9B		
D620	8-719-110-03	DIODE	MTZJ-T-77-7.5C		

Ref. No.	Part No.	Description		Remark
D622	8-719-991-33	DIODE	1SS133T-77	
D630	8-719-110-49	DIODE	MTZJ-T-77-18B	(CA320/CA320X)
D640	8-719-110-49	DIODE	MTZJ-T-77-18B	
D650	8-719-110-49	DIODE	MTZJ-T-77-18B	
D700	8-719-200-82	DIODE	11ES2-TA1B	
D710	8-719-049-38	DIODE	1N5404TU	
D720	8-719-988-61	DIODE	1SS355TE-17	
D721	8-719-200-82	DIODE	11ES2-TA1B	
D723	8-719-200-82	DIODE	11ES2-TA1B	
D724	8-719-200-82	DIODE	11ES2-TA1B	
D731	8-719-110-14	DIODE	MTZJ-9.1C	
D740	8-719-200-82	DIODE	11ES2-TA1B	
D741	8-719-935-40	DIODE	HZS6B2LTD	
D750	8-719-988-61	DIODE	1SS355TE-17	
D800	8-719-109-93	DIODE	MTZJ-T-77-6.2B	
D801	8-719-110-49	DIODE	MTZJ-T-77-18B	
D802	8-719-110-49	DIODE	MTZJ-T-77-18B	
D805	8-719-109-97	DIODE	MTZJ-T-77-6.8B	
		< IC >		
IC1	8-759-827-78	IC	MN101C49GTH	
IC2	8-759-682-69	IC	XC61CN4302MR	
IC350	8-759-924-46	IC	BA4560F-T1	
IC400	8-759-827-11	IC	LC75421M-TLM	
IC500	8-759-486-44	IC	TDA7386	
IC800	8-759-096-16	IC	MM1175XFF	
		< COIL >		
L1	1-410-509-11	INDUCTOR	10uH	
L100	1-410-322-11	INDUCTOR	3.3uH	
L101	1-412-967-31	INDUCTOR	0.1uH	
L710	1-419-476-11	CHOKE COIL	250uH	
		< TRANSISTOR >		
Q450	8-729-920-21	TRANSISTOR	DTC314TK-T-146	
Q451	8-729-920-21	TRANSISTOR	DTC314TK-T-146	
Q452	8-729-920-21	TRANSISTOR	DTC314TK-T-146	
Q453	8-729-920-21	TRANSISTOR	DTC314TK-T-146	
Q620	8-729-043-32	TRANSISTOR	PDTA114EK-115	
Q621	8-729-043-29	TRANSISTOR	PDTC144EK-115	
Q630	8-729-422-33	TRANSISTOR	2PD601AR-115	(CA320/CA320X)
Q640	8-729-422-33	TRANSISTOR	2PD601AR-115	
Q650	8-729-043-27	TRANSISTOR	PDTC114EK-115	
Q700	8-729-205-95	TRANSISTOR	2SA1428-OY-TPF2	
Q702	8-729-043-27	TRANSISTOR	PDTC114EK-115	
Q703	8-729-205-95	TRANSISTOR	2SA1428-OY-TPF2	
Q704	8-729-043-27	TRANSISTOR	PDTC114EK-115	
Q720	8-729-043-33	TRANSISTOR	PDTA124EK-115	
Q721	8-729-216-22	TRANSISTOR	2PB709AR-115	
Q722	8-729-205-95	TRANSISTOR	2SA1428-OY-TPF2	
Q724	8-729-205-95	TRANSISTOR	2SA1428-OY-TPF2	
Q725	8-729-043-27	TRANSISTOR	PDTC114EK-115	
Q726	8-729-043-27	TRANSISTOR	PDTC114EK-115	
Q730	8-729-921-48	TRANSISTOR	2SD1760F5-TRPQR	
Q731	8-729-216-22	TRANSISTOR	2PB709AR-115	
Q732	8-729-043-27	TRANSISTOR	PDTC114EK-115	

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Ref. No.	Part No.	Description			Remark
Q733	8-729-904-60	TRANSISTOR	DTB113ZK-T-146		
Q734	8-729-422-33	TRANSISTOR	2PD601AR-115		
Q740	8-729-205-95	TRANSISTOR	2SA1428-OY-TPF2		
Q741	8-729-422-33	TRANSISTOR	2PD601AR-115		
Q750	8-729-216-22	TRANSISTOR	2PB709AR-115		
		< RESISTOR/DIODE/CAPACITOR >			
R1	1-216-864-11	SHORT	0		
R2	1-216-864-11	SHORT	0		
R3	1-216-813-11	METAL CHIP	220	5%	1/16W
R4	1-216-814-11	METAL CHIP	270	5%	1/16W
R7	1-216-809-11	METAL CHIP	100	5%	1/16W
R8	1-216-845-11	METAL CHIP	100K	5%	1/16W
R9	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R10	1-216-864-11	SHORT	0		
R11	1-216-809-11	METAL CHIP	100	5%	1/16W
R12	1-216-809-11	METAL CHIP	100	5%	1/16W
R21	1-247-807-31	CARBON	100	5%	1/4W
R22	1-216-864-11	SHORT	0		
R26	1-249-441-11	CARBON	100K	5%	1/4W
R27	1-216-841-11	METAL CHIP	47K	5%	1/16W
R32	1-247-807-31	CARBON	100	5%	1/4W
R33	1-247-807-31	CARBON	100	5%	1/4W
R34	1-247-807-31	CARBON	100	5%	1/4W
R41	1-216-809-11	METAL CHIP	100	5%	1/16W
R61	1-216-845-11	METAL CHIP	100K	5%	1/16W
R62	1-216-864-11	SHORT	0 (CA300)		
R63	1-216-845-11	METAL CHIP	100K	5%	1/16W (CA320/CA320X)
R64	1-216-864-11	SHORT	0 (CA300)		
R67	1-249-441-11	CARBON	100K	5%	1/4W (CA320/CA320X)
R68	1-216-864-11	SHORT	0		
R69	1-216-845-11	METAL CHIP	100K	5%	1/16W
R70	1-216-864-11	SHORT	0		
R71	1-216-845-11	METAL CHIP	100K	5%	1/16W
R72	1-216-845-11	METAL CHIP	100K	5%	1/16W
R73	1-216-845-11	METAL CHIP	100K	5%	1/16W
R75	1-216-864-11	SHORT	0 (CA300/CA320)		
R76	1-216-845-11	METAL CHIP	100K	5%	1/16W (CA320X)
R81	1-216-845-11	METAL CHIP	100K	5%	1/16W
R102	1-249-417-11	CARBON	1K	5%	1/4W
R103	1-216-841-11	METAL CHIP	47K	5%	1/16W
R104	1-247-807-31	CARBON	100	5%	1/4W
R105	1-247-807-31	CARBON	100	5%	1/4W
R106	1-247-807-31	CARBON	100	5%	1/4W
R107	1-247-807-31	CARBON	100	5%	1/4W
R108	1-216-845-11	METAL CHIP	100K	5%	1/16W
R111	1-216-818-11	METAL CHIP	560	5%	1/16W
R115	1-216-864-11	SHORT	0		
R116	1-216-839-11	METAL CHIP	33K	5%	1/16W
R117	1-216-852-11	METAL CHIP	390K	5%	1/16W
R120	1-216-837-11	METAL CHIP	22K	5%	1/16W
R121	1-216-837-11	METAL CHIP	22K	5%	1/16W
R122	1-216-839-11	METAL CHIP	33K	5%	1/16W
R123	1-216-839-11	METAL CHIP	33K	5%	1/16W
R130	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R131	1-216-833-11	METAL CHIP	10K	5%	1/16W
R208	1-216-864-11	SHORT	0		
R350	1-216-841-11	METAL CHIP	47K	5%	1/16W
R351	1-216-841-11	METAL CHIP	47K	5%	1/16W
R352	1-216-833-11	METAL CHIP	10K	5%	1/16W
R353	1-216-833-11	METAL CHIP	10K	5%	1/16W
R354	1-216-808-11	METAL CHIP	82	5%	1/16W
R355	1-216-808-11	METAL CHIP	82	5%	1/16W
R356	1-216-835-11	METAL CHIP	15K	5%	1/16W
R357	1-216-835-11	METAL CHIP	15K	5%	1/16W
R358	1-216-854-11	METAL CHIP	560K	5%	1/16W
R359	1-216-854-11	METAL CHIP	560K	5%	1/16W
R360	1-249-393-11	CARBON	10	5%	1/4W
R361	1-216-821-11	METAL CHIP	1K	5%	1/16W
R362	1-216-821-11	METAL CHIP	1K	5%	1/16W
R401	1-216-797-11	METAL CHIP	10	5%	1/16W
R410	1-216-834-11	METAL CHIP	12K	5%	1/16W
R411	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R420	1-216-834-11	METAL CHIP	12K	5%	1/16W
R421	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R430	1-216-833-11	METAL CHIP	10K	5%	1/16W
R431	1-216-833-11	METAL CHIP	10K	5%	1/16W
R432	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R433	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R450	1-216-813-11	METAL CHIP	220	5%	1/16W
R451	1-216-813-11	METAL CHIP	220	5%	1/16W
R452	1-216-813-11	METAL CHIP	220	5%	1/16W
R453	1-216-813-11	METAL CHIP	220	5%	1/16W
R454	1-216-833-11	METAL CHIP	10K	5%	1/16W
R455	1-216-833-11	METAL CHIP	10K	5%	1/16W
R456	1-216-833-11	METAL CHIP	10K	5%	1/16W
R457	1-216-833-11	METAL CHIP	10K	5%	1/16W
R458	1-216-841-11	METAL CHIP	47K	5%	1/16W
R459	1-216-841-11	METAL CHIP	47K	5%	1/16W
R460	1-216-841-11	METAL CHIP	47K	5%	1/16W
R461	1-216-841-11	METAL CHIP	47K	5%	1/16W
R501	1-249-429-11	CARBON	10K	5%	1/4W
R500	1-216-821-11	METAL CHIP	1K	5%	1/16W
R502	1-216-833-11	METAL CHIP	10K	5%	1/16W
R503	1-216-801-11	METAL CHIP	22	5%	1/16W
R600	1-249-417-11	CARBON	1K	5%	1/4W
R601	1-249-417-11	CARBON	1K	5%	1/4W
R602	1-249-417-11	CARBON	1K	5%	1/4W
R603	1-249-417-11	CARBON	1K	5%	1/4W
R604	1-249-417-11	CARBON	1K	5%	1/4W
R605	1-249-417-11	CARBON	1K	5%	1/4W
R606	1-249-417-11	CARBON	1K	5%	1/4W
R607	1-249-417-11	CARBON	1K	5%	1/4W
R608	1-216-864-11	SHORT	0		
R620	1-216-805-11	METAL CHIP	47	5%	1/16W
R621	1-216-833-11	METAL CHIP	10K	5%	1/16W
R622	1-249-421-11	CARBON	2.2K	5%	1/4W
R630	1-249-417-11	CARBON	1K	5%	1/4W (CA320/CA320X)
R631	1-249-437-11	CARBON	47K	5%	1/4W (CA320/CA320X)
R632	1-216-833-11	METAL CHIP	10K	5%	1/16W (CA320/CA320X)

MAIN

Ref. No.	Part No.	Description			Remark
R633	1-216-833-11	METAL CHIP	10K	5%	1/16W (CA320/CA320X)
R634	1-216-845-11	METAL CHIP	100K	5%	1/16W (CA320/CA320X)
R635	1-216-845-11	METAL CHIP	100K	5%	1/16W (CA300)
R640	1-249-425-11	CARBON	4.7K	5%	1/4W
R641	1-216-841-11	METAL CHIP	47K	5%	1/16W
R642	1-216-841-11	METAL CHIP	47K	5%	1/16W
R643	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R644	1-216-845-11	METAL CHIP	100K	5%	1/16W
R650	1-249-417-11	CARBON	1K	5%	1/4W
R700	1-216-833-11	METAL CHIP	10K	5%	1/16W
R701	1-249-421-11	CARBON	2.2K	5%	1/4W
R702	1-249-421-11	CARBON	2.2K	5%	1/4W
R703	8-719-200-82	DIODE 11ES2-TA1B			
R704	1-249-482-11	CARBON	4.7	5%	1/2W
R705	1-216-833-11	METAL CHIP	10K	5%	1/16W
R706	1-249-421-11	CARBON	2.2K	5%	1/4W
R720	1-216-837-11	METAL CHIP	22K	5%	1/16W
R721	1-249-421-11	CARBON	2.2K	5%	1/4W
R722	1-249-421-11	CARBON	2.2K	5%	1/4W
R723	1-249-421-11	CARBON	2.2K	5%	1/4W
R724	1-249-421-11	CARBON	2.2K	5%	1/4W
R725	1-249-421-11	CARBON	2.2K	5%	1/4W
R728	1-216-837-11	METAL CHIP	22K	5%	1/16W
R730	1-216-833-11	METAL CHIP	10K	5%	1/16W
R731	1-249-421-11	CARBON	2.2K	5%	1/4W
R732	1-216-817-11	METAL CHIP	470	5%	1/16W
R733	1-249-434-11	CARBON	27K	5%	1/4W
R740	1-216-837-11	METAL CHIP	22K	5%	1/16W
R751	1-216-841-11	METAL CHIP	47K	5%	1/16W
R752	1-216-838-11	METAL CHIP	27K	5%	1/16W
R753	1-216-809-11	METAL CHIP	100	5%	1/16W
R800	1-216-864-11	SHORT	0		
R801	1-216-833-11	METAL CHIP	10K	5%	1/16W
R802	1-216-809-11	METAL CHIP	100	5%	1/16W
R803	1-216-809-11	METAL CHIP	100	5%	1/16W
R810	1-216-845-11	METAL CHIP	100K	5%	1/16W
R811	1-216-864-11	SHORT	0		
R852	1-247-807-31	CARBON	100	5%	1/4W
R853	1-216-864-11	SHORT	0		
R855	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
		< SWITCH >			
S1	1-692-431-21	SWITCH, TACTILE (RESET)			
S60	1-572-552-11	SWITCH, SLIDE (FREQUENCY SELECT)			(CA320/CA320X)
		< THERMISTOR >			
TH800	1-801-792-21	THERMISTOR, POSITIVE			
		< TUNER >			
TU100	1-693-524-11	FM/AM TUNER UNIT (FAE370-A01)			
		< VIBRATOR >			
X1	1-795-134-11	VIBRATOR, CRYSTAL (18.432MHz)			
X4	1-567-098-41	VIBRATOR, CRYSTAL (32.768kHz)			

****

MISCELLANEOUS
****

6	1-776-207-31	CORD (WITH CONNECTOR) (POWER) (CA300)	
6	1-783-736-61	CORD (WITH CONNECTOR) (POWER)	(CA320/CA320X)
66	1-694-696-31	CONDUCTIVE BOARD, CONNECTION	
69	1-786-099-11	SWITCH, SHEET	
F901	1-532-877-11	FUSE (BLADE TYPE) (AUTO FUSE) (10A)	
HP901	1-500-661-11	HEAD (PLAYBACK)	
LCD900	1-804-512-11	DISPLAY PANEL, LIQUID CRYSTAL	
M901	1-763-507-11	MOTOR (CAPSTAN/REEL)	
S901	1-771-928-11	SWITCH (SLIDE) (DIRECTION)	
S902	1-771-926-11	SWITCH (LEAF) (FF/REW)	
S903	1-771-927-11	SWITCH (LEAF) (TAPE DETECT)	

****

****
HARDWARE LIST
****

#1	7-685-782-09	SCREW +PTT 2X5 (S)
#2	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S
#3	7-685-794-09	SCREW +PTT 2.6X10 (S)
#4	7-685-106-19	SCREW +P 2X10 TYPE2 NON-SLIT
#5	7-621-775-10	SCREW +B 2.6X4
#6	7-627-553-27	PRECISION SCREW +P 2X2.5 TYPE3
#7	7-685-101-11	SCREW +PTP 2X3 NON-SLIT
#8	7-621-255-35	SCREW +P 2X5
#9	7-621-255-25	SCREW +P 2X4
#10	7-685-781-09	SCREW +PTT 2X4 (S)

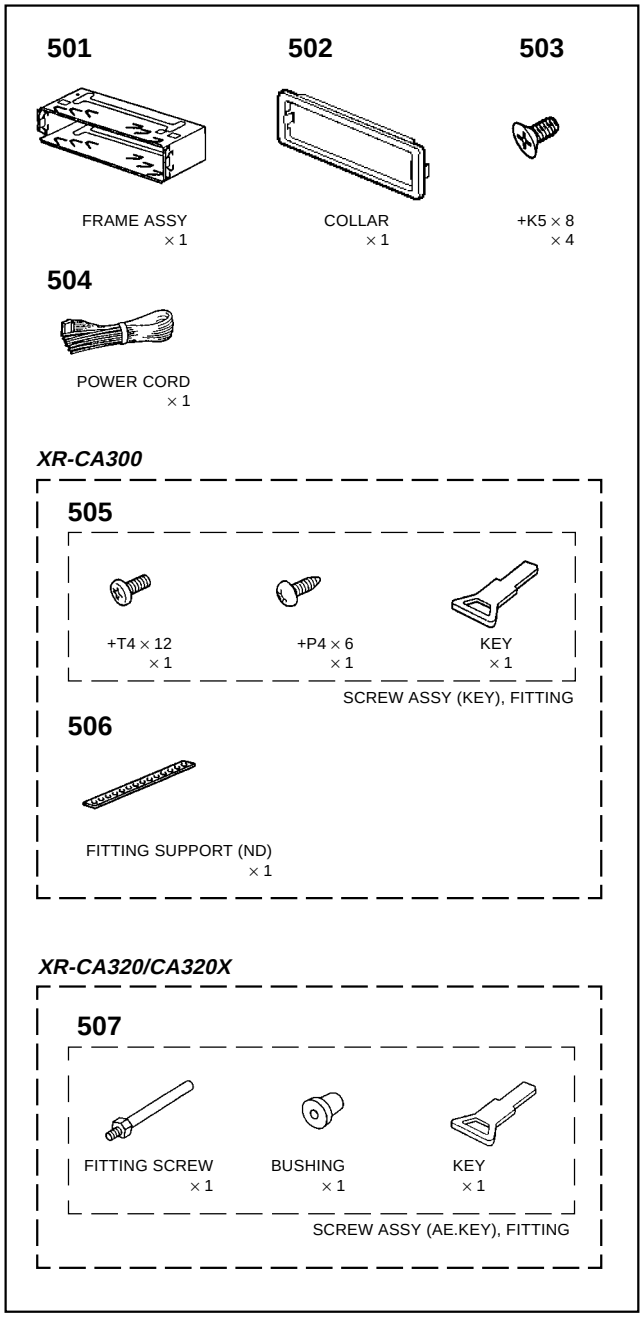
****

ACCESSORIES & PACKING MATERIALS
****

	3-225-231-11	MANUAL, INSTRUCTION (ENGLISH) (CA300)
	3-225-231-21	MANUAL, INSTRUCTION (FRENCH) (CA300)
	3-225-231-31	MANUAL, INSTRUCTION (ENGLISH, SPANISH, TRADITIONAL CHINESE) (CA320/CA320X)
	3-225-234-11	MANUAL, INSTRUCTION, INSTALL (ENGLISH, FRENCH) (CA300)
	3-225-234-21	MANUAL, INSTRUCTION, INSTALL (ENGLISH, SPANISH, TRADITIONAL CHINESE) (CA320/CA320X)
	X-3378-490-1	CASE (PANEL) ASSY

****

Ref. No.	Part No.	Description	Remark
		PARTS FOR INSTALLATION AND CONNECTION	
		************************************	
501	X-3376-298-1	FRAME ASSY, FITTING	
502	3-041-599-01	COLLAR	
503	3-934-325-01	SCREW, +K (5X8) TAPPING	
504	1-776-207-31	CORD (WITH CONNECTOR) (POWER)	
505	X-3370-076-1	SCREW ASSY (KEY), FITTING (CA300)	
506	3-924-961-01	SUPPORT (ND), FITTING (CA300)	
507	X-3370-077-1	SCREW ASSY (AE.KEY), FITTING	(CA320/CA320X)



MEMO

XR-CA300/CA320/CA320X

SONY

SERVICE MANUAL

Ver 1.2 2001.05

US Model
Canadian Model
XR-CA300
E Model
XR-CA320/CA320X
Russian Model
XR-CA320X

SUPPLEMENT-1

File this supplement with the service manual.

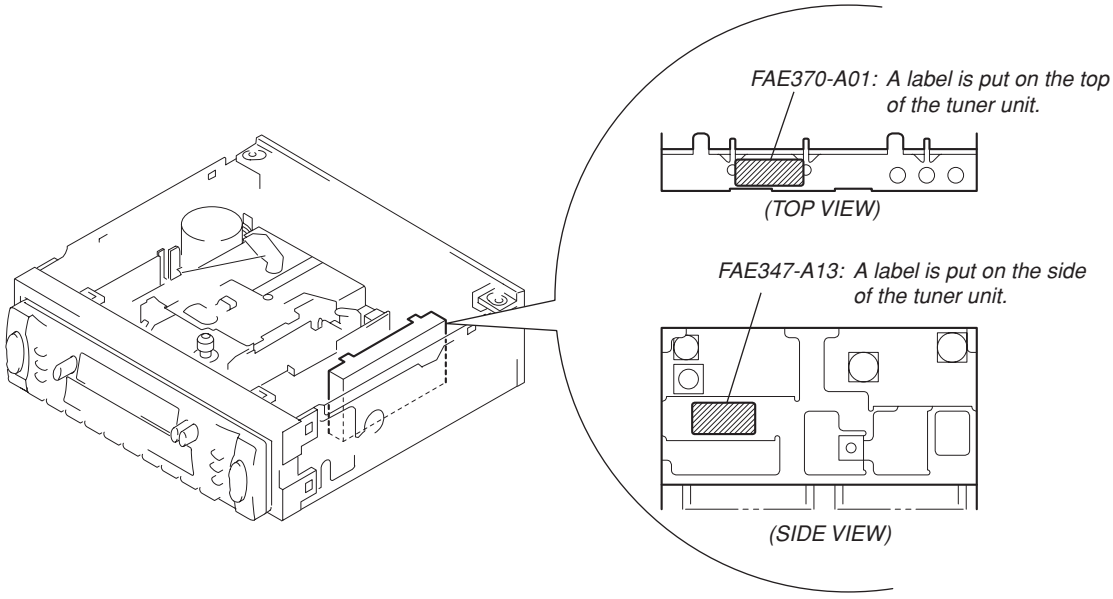
Subject: Change of MAIN board resulting from changing the tuner unit.

(ENG-01004)

Only the main board that the tuner unit (FAE347-A13) is mounted on is described in this supplement-1.

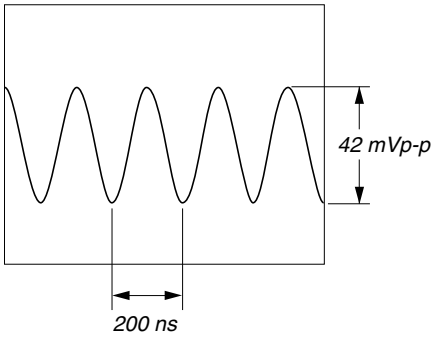
• TUNER UNIT TYPE DISCRIMINATION

Discriminate between TUNER UNIT (FAE370-A01) and TUNER UNIT (FAE347-A13) with the position of the label put on the tuner unit.


FAE370-A01: A label is put on the top of the tuner unit.
(TOP VIEW)
FAE347-A13: A label is put on the side of the tuner unit.
(SIDE VIEW)

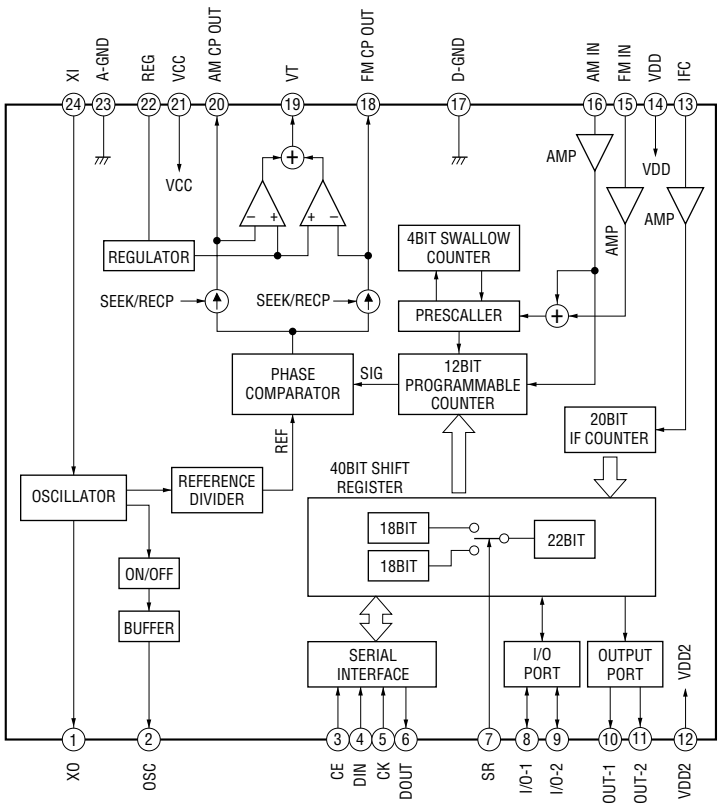
• **Waveform (Refer to page 24 except for ❸.)**
– MAIN Board –

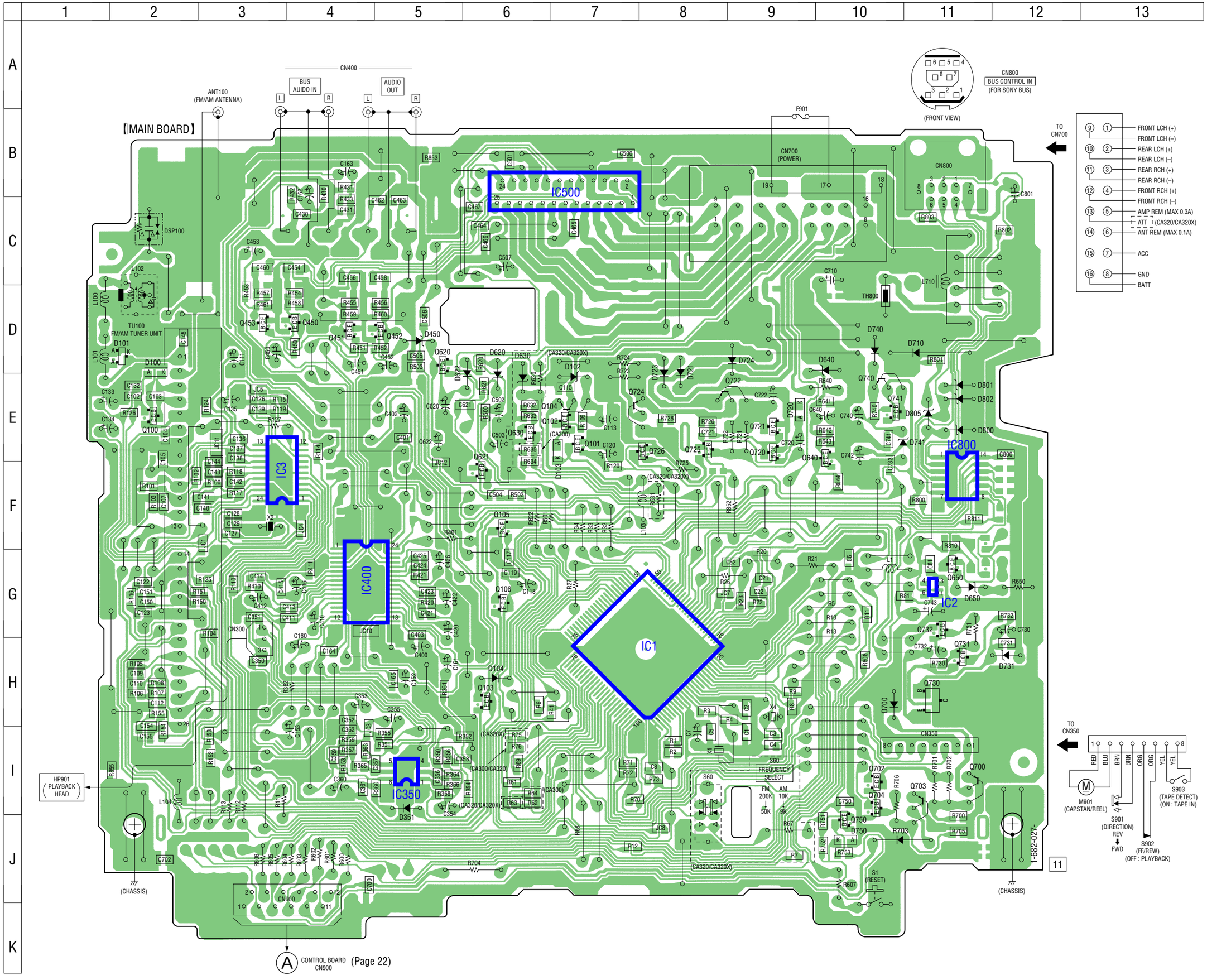
❸ IC3 ① (X OUT)



• **IC Block Diagram (Refer to page 24 except for IC3.)**
– MAIN Board –

IC3 TB2118F-EL-S

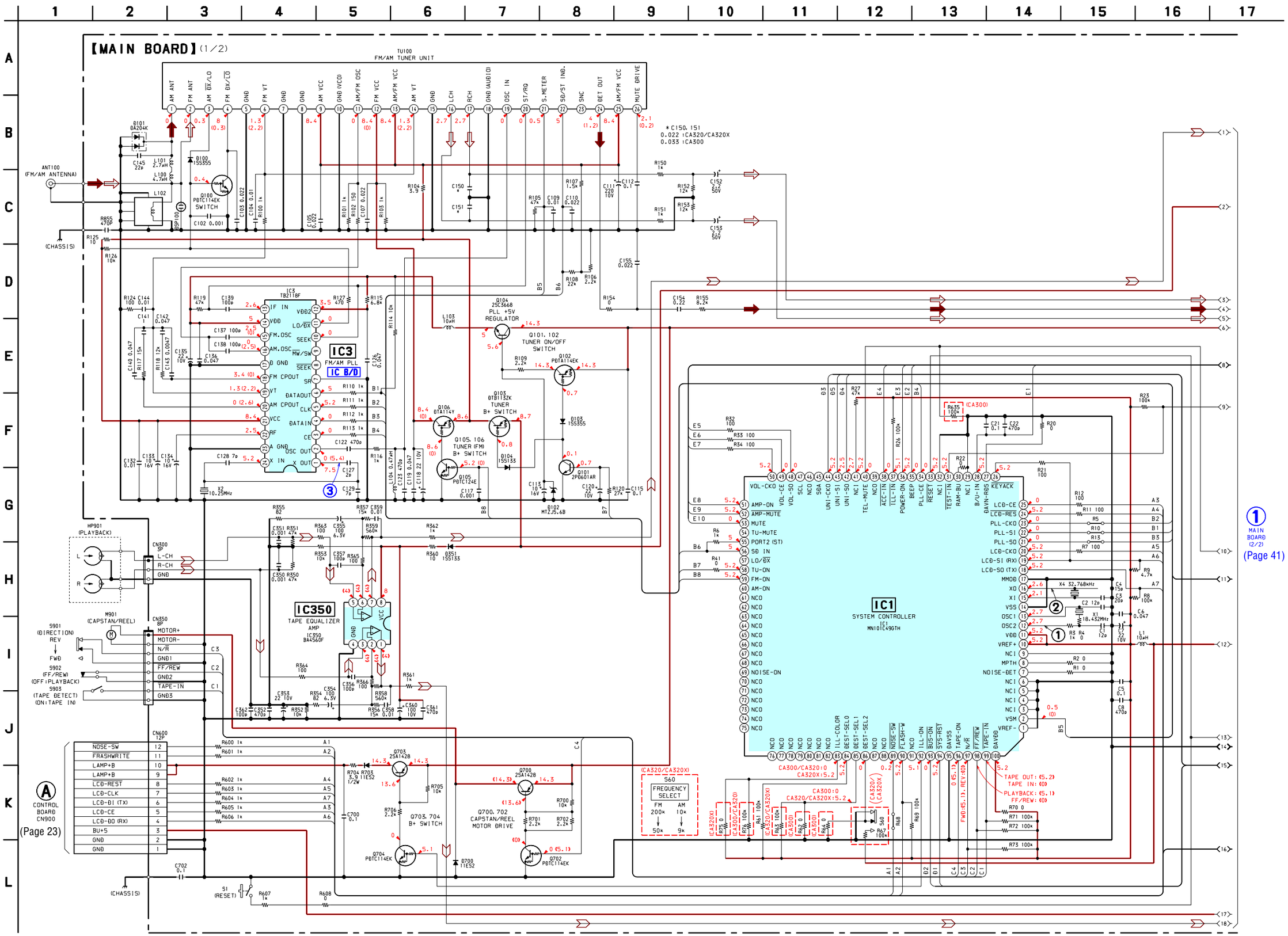




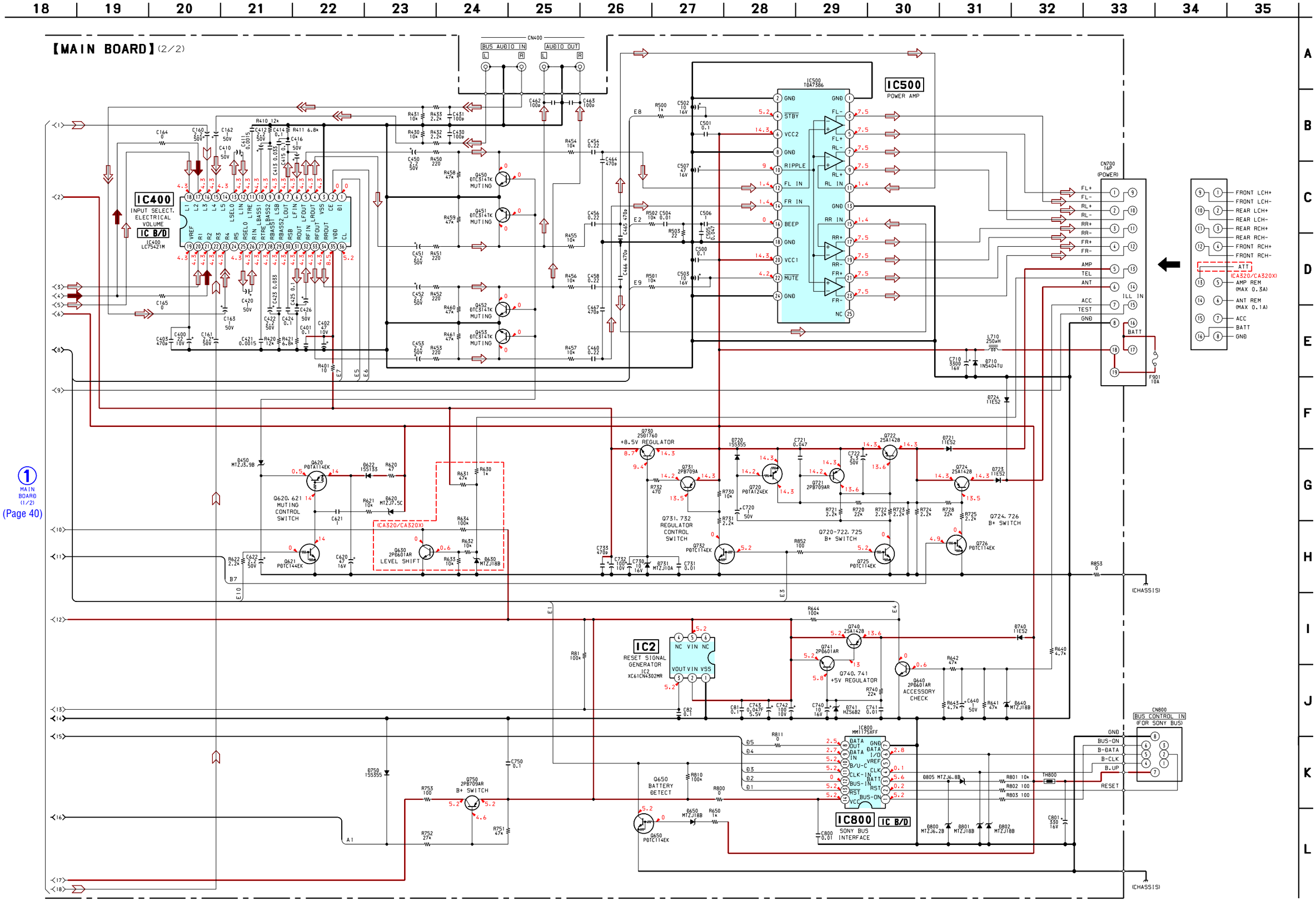
- **Semiconductor Location**

Ref. No.	Location
D100	D-2
D101	D-2
D102	E-7
D103	E-7
D104	H-6
D351	I-5
D450	D-5
D620	E-6
D622	E-6
D630	E-6
D640	D-10
D650	G-11
D700	H-10
D710	D-11
D720	E-9
D721	E-8
D723	E-8
D724	D-9
D731	H-12
D740	D-10
D741	E-10
D750	J-10
D800	E-11
D801	E-11
D802	E-11
D805	E-11
IC1	H-8
IC2	G-11
IC3	F-3
IC350	I-5
IC400	G-4
IC500	B-7
IC800	F-11
Q100	E-2
Q101	E-7
Q102	E-7
Q103	H-6
Q104	E-7
Q105	F-6
Q106	G-6
Q450	D-4
Q451	D-4
Q452	D-5
Q453	D-3
Q620	D-5
Q621	F-6
Q630	E-6
Q640	E-10
Q650	G-11
Q700	I-11
Q702	I-10
Q703	I-11
Q704	I-10
Q720	E-9
Q721	E-9
Q722	E-8
Q724	E-7
Q725	E-8
Q726	E-8
Q730	H-11
Q731	H-11
Q732	G-11
Q740	E-10
Q741	E-10
Q750	J-10
R703	J-10

SCHEMATIC DIAGRAM – MAIN Board (1/2) – • See page 38 for Waveform. • See page 38 for IC Block Diagram.



SCHEMATIC DIAGRAM – MAIN Board (2/2) –



IC PIN FUNCTION DESCRIPTION

• MAIN BOARD IC1 MN101C49GTH1 (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Description
1	VREF –	—	Reference voltage (0V) terminal (for A/D converter)
2	VSM	I	FM and AM signal meter voltage detection input from the FM/AM tuner unit (TU100) (A/D input)
3 to 6	NCI	I	Not used (fixed at “L”)
7	NOISE-DET	I	Not used (fixed at “L”)
8	MPTH	I	Not used (fixed at “L”)
9	NCI	I	Not used (fixed at “L”)
10	VREF +	—	Reference voltage (+5V) terminal (for A/D converter)
11	VDD	—	Power supply terminal (+5V)
12	OSC2	O	Main system clock output terminal (18.432MHz)
13	OSC1	I	Main system clock input terminal (18.432MHz)
14	VSS	—	Ground terminal
15	XI	I	Sub system clock input terminal (32.768kHz)
16	XO	O	Sub system clock output terminal (32.768kHz)
17	MMOD	I	Setting terminal for the single chip mode “L”: single chip
18	LCD-SO (TX)	O	LCD serial data output to the liquid crystal display driver (IC900)
19	LCD-SI (RX)	I	LCD serial data input from the liquid crystal display driver (IC900)
20	LCD-CKO	O	LCD serial transfer clock signal output to the liquid crystal display driver (IC900)
21	PLL-SO	O	Serial data output to the FM/AM PLL (IC3)
22	PLL-SI	I	Serial data input from the FM/AM PLL (IC3)
23	PLL-CKO	O	Serial data transfer clock signal output to the FM/AM PLL (IC3)
24	$\overline{\text{LCD-RES}}$	O	LCD reset signal output to the liquid crystal display driver (IC900) “L”: reset
25	LCD-CE	O	Chip enable signal output to the liquid crystal display driver (IC900) “H” active
26	$\overline{\text{KEYACK}}$	I	Key acknowledge signal detect input from the liquid crystal display driver (IC900)
27	DAVN-RDS	I	Not used (fixed at “L”)
28	B/U-IN	I	Battery detect signal input from the SONY bus interface (IC800) and battery detect circuit “L” is input at low voltage
29	NCI	I	Not used (fixed at “L”)
30	RAM BU	I	Internal RAM reset detection signal input terminal Input terminal to check that RAM data are not destroyed due to low voltage This checking is made within 100 msec after reset “L”: RAM reset
31	$\overline{\text{TEST-IN}}$	I	Setting terminal for the test mode “L”: test mode, Normally: fixed at “H”
32	NCI	I	Not used (fixed at “L”)
33	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator (IC2) and reset switch (S1) “L”: reset “L” is input for several 100 msec after power on, then it changes to “H”
34	PLL-CE	O	Chip enable signal output to the FM/AM PLL (IC3) “H” active
35	BEEP	O	Beep sound drive signal output to the power amp (IC500)
36	POWER-ON	O	Main system power supply on/off control signal output terminal “H”: power on
37	$\overline{\text{ILL-IN}}$	I	Not used (fixed at “H”)
38	$\overline{\text{ACC-IN}}$	I	Accessory detect signal input terminal “L”: accessory on
39	NCO	O	Not used (open)
40	TEL-MUTE	I	Telephone muting signal input terminal At input of “H”, the signal is attenuated by –20 dB Used for the XR-CA320/CA320X only
41	NCI	I	Not used (fixed at “H”)
42	UNI-SO	O	Serial data output to the SONY bus interface (IC800)
43	UNI-SI	I	Serial data input from the SONY bus interface (IC800)

Pin No.	Pin Name	I/O	Description
44	UNI-CKO	O	Serial data transfer clock signal output to the SONY bus interface (IC800)
45	SDA	I/O	Not used (open)
46	NCO	O	Not used (open)
47	SCL	O	Not used (open)
48	VOL-SO	O	Serial data output to the electrical volume (IC400)
49	VOL-CE	O	Chip enable signal output to the electrical volume (IC400) “H” active
50	VOL-CKO	O	Serial data transfer clock signal output to the electrical volume (IC400)
51	AMP-ON	O	Standby on/off control signal output to the power amp (IC500) “L”: standby mode, “H”: amp on
52	$\overline{\text{AMP-MUTE}}$	O	Muting on/off control signal output to the power amp (IC500) “L”: muting on
53	MUTE	O	Audio line muting on/off control signal output terminal “H”: muting on
54	TU-MUTE	O	Not used (open)
55	PORT2 (ST)	I	FM stereo broadcasting detection signal input from the FM/AM tuner unit (TU100) “L”: stereo display lighting
56	SD IN	I	Station detector detect input from the FM/AM tuner unit (TU100) Stop level for SEEK is determined SD is present at input of “H”
57	LO/$\overline{\text{DX}}$	O	Local/DX control signal output “L”: DX Not used (open)
58	TU-ON	O	Tuner system power supply on/off control signal output terminal “H”: tuner power on
59	FM-ON	O	FM system power supply on/off control signal output terminal “L”: AM power on, “H”: FM power on
60	AM-ON	O	AM system power supply on/off control signal output terminal “L”: FM power on, “H”: AM power on Not used (open)
61 to 68	NCO	O	Not used (open)
69	NOISE-ON	O	Not used (open)
70 to 82	NCO	O	Not used (open)
83	ILL-COLOR	I	Illumination color select input terminal “L”: amber illumination “H”: green illumination
84	DEST-SEL0	I	Destination setting terminal (fixed at “H”)
85	DEST-SEL1	I	Destination setting terminal XR-CA300: fixed at “L”, XR-CA320/CA320X: fixed at “H”
86	DEST-SEL2	I	Destination setting terminal XR-CA300: fixed at “L”, XR-CA320/CA320X: input for the FREQUENCY SELECT switch (S60)
87, 88	NCO	O	Not used (open)
89	$\overline{\text{NOSE-SW}}$	I	Front panel block remove/attach detection signal input terminal “L”: front panel is attached
90	$\overline{\text{FLASH-W}}$	I	Internal flash memory data write mode detection signal input terminal “L”: data write mode, Normally: fixed at “H”
91	NCO	O	Not used (open)
92	ILL-ON	O	Power on/off control signal output of the illumination LED and LCD back light (PL901, 902) “H”: power on
93	$\overline{\text{BUS-ON}}$	O	Bus on/off control signal output to the SONY bus interface (IC800) “L”: bus on
94	$\overline{\text{SYS-RST}}$	O	Reset signal output to the SONY bus interface (IC800) “L”: reset
95	DAVSS	—	Ground terminal (for D/A converter)
96	TAPE-ON	O	Capstan/reel motor (M901) drive signal output terminal “H”: motor on
97	N/$\overline{\text{R}}$	I	Tape direction switch (S903) input terminal “L”: reverse direction “H”: forward direction
98	$\overline{\text{FF/REW}}$	I	FF/REW detection switch (S902) input terminal “L”: FF/REW mode
99	$\overline{\text{TAPE-IN}}$	I	Tape in detection switch (S903) input terminal “L”: tape in
100	DAVDD	—	Power supply terminal (+5V) (for D/A converter)

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EXPLODED VIEWS

Page	TUNER UNIT (FAE370-A01)				TUNER UNIT (FAE347-A13)			
	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
27	* 8	A-3326-859-A	MAIN BOARD, COMPLETE (CA300)		8	A-3340-135-A	MAIN BOARD, COMPLETE (CA300)	(Refer to the note)
	* 8	A-3326-884-A	MAIN BOARD, COMPLETE (CA320X)		8	A-3340-137-A	MAIN BOARD, COMPLETE (CA320X)	(Refer to the note)
	* 8	A-3326-962-A	MAIN BOARD, COMPLETE (CA320)		8	A-3340-136-A	MAIN BOARD, COMPLETE (CA320)	(Refer to the note)
	TU100	1-693-524-11	FM/AM TUNER UNIT (FAE370-A01)		TU100	1-693-511-11	FM/AM TUNER UNIT (FAE347-A13)	

NOTE:

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The main board that the tuner unit (FAE347-A13) is mounted is not supplied. When completed main board is replaced, replaced it to a main board that tuner unit (FAE370-A01) is mounted.

MAIN

ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA. . : μA. . uPA. . : μPA. .
  uPB. . : μPB. . uPC. . : μPC. .
  uPD. . : μPD. .
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

- The main board that the tuner unit (FAE347-A13) is mounted is not supplied.
  When completed main board is replaced, replaced it to a main board that tuner unit (FAE370-A01) is mounted.

Ref. No.	Part No.	Description				Remark
	A-3340-135-A	MAIN BOARD, COMPLETE (CA300)				(Refer to the note)
	A-3340-136-A	MAIN BOARD, COMPLETE (CA320)				(Refer to the note)
	A-3340-137-A	MAIN BOARD, COMPLETE (CA320X)				(Refer to the note)
		**********				
*	3-041-578-01	BRACKET (IC)				
*	3-224-921-01	HEAT SINK				
	7-685-794-09	SCREW +PTT 2.6X10 (S)				
		< JACK >				
ANT100	1-815-185-11	JACK (ANT) (FM/AM ANTENNA)				
		< CAPACITOR/RESISTOR >				
C1	1-162-916-11	CERAMIC CHIP	12PF	5%	50V	
C2	1-162-916-11	CERAMIC CHIP	12PF	5%	50V	
C3	1-164-160-11	CERAMIC CHIP	20PF	5%	50V	
C4	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	
C5	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C6	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C7	1-124-228-11	ELECT	22uF	20%	10V	
C8	1-164-315-11	CERAMIC CHIP	470PF	5%	50V	
C21	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C22	1-164-315-11	CERAMIC CHIP	470PF	5%	50V	
C81	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C82	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C102	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C103	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C104	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C105	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C107	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C109	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C110	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C111	1-126-934-11	ELECT	220uF	20%	10V	
C112	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C113	1-126-157-11	ELECT	10uF	20%	16V	
C115	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C117	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C118	1-124-228-11	ELECT	22uF	20%	10V	
C119	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C120	1-124-228-11	ELECT	22uF	20%	10V	
C122	1-164-315-11	CERAMIC CHIP	470PF	5%	50V	
C123	1-164-315-11	CERAMIC CHIP	470PF	5%	50V	

Ref. No.	Part No.	Description			Remark
C126	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C127	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V
C128	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C129	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C132	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C133	1-126-157-11	ELECT	10uF	20%	16V
C134	1-126-157-11	ELECT	10uF	20%	16V
C135	1-124-228-11	ELECT	22uF	20%	10V
C136	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C137	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C138	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C139	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C140	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C141	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C142	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C143	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C144	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C145	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C150	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V (CA320/CA320X)
C150	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V (CA300)
C151	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V (CA320/CA320X)
C151	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V (CA300)
C152	1-124-257-00	ELECT	2.2uF	20%	50V
C153	1-124-257-00	ELECT	2.2uF	20%	50V
C154	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C155	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C160	1-124-257-00	ELECT	2.2uF	20%	50V
C161	1-124-257-00	ELECT	2.2uF	20%	50V
C162	1-104-942-11	ELECT	1uF	20%	50V
C163	1-104-942-11	ELECT	1uF	20%	50V
C164	1-216-864-11	METAL CHIP	0	5%	1/16W
C165	1-216-864-11	METAL CHIP	0	5%	1/16W
C350	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C351	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C352	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C353	1-124-228-11	ELECT	22uF	20%	10V
C354	1-124-584-00	ELECT	100uF	20%	10V
C355	1-124-584-00	ELECT	100uF	20%	10V
C356	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C357	1-162-927-11	CERAMIC CHIP	100PF	5%	50V

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Ref. No.	Part No.	Description			Remark
C358	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C359	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C360	1-124-584-00	ELECT	100uF	20%	10V
C361	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C362	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C400	1-124-228-11	ELECT	22uF	20%	10V
C401	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C402	1-124-230-11	ELECT	47uF	20%	10V
C403	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C410	1-104-942-11	ELECT	1uF	20%	50V
C411	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C412	1-124-257-00	ELECT	2.2uF	20%	50V
C413	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C414	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C415	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C416	1-104-942-11	ELECT	1uF	20%	50V
C420	1-104-942-11	ELECT	1uF	20%	50V
C421	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C422	1-124-257-00	ELECT	2.2uF	20%	50V
C423	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C424	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C425	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C426	1-104-942-11	ELECT	1uF	20%	50V
C430	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C431	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C450	1-124-257-00	ELECT	2.2uF	20%	50V
C451	1-124-257-00	ELECT	2.2uF	20%	50V
C452	1-124-257-00	ELECT	2.2uF	20%	50V
C453	1-124-257-00	ELECT	2.2uF	20%	50V
C454	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C456	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C458	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C460	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C462	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C463	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C464	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C465	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C466	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C467	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C500	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C501	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C502	1-126-157-11	ELECT	10uF	20%	16V
C503	1-126-157-11	ELECT	10uF	20%	16V
C504	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C505	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C506	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C507	1-124-589-11	ELECT	47uF	20%	16V
C620	1-124-589-11	ELECT	47uF	20%	16V
C621	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C622	1-124-257-00	ELECT	2.2uF	20%	50V
C640	1-104-942-11	ELECT	1uF	20%	50V
C700	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C702	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C710	1-126-936-11	ELECT	3300uF	20%	16V
C720	1-104-942-11	ELECT	1uF	20%	50V
C721	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C722	1-126-162-11	ELECT	3.3uF	20%	50V

Ref. No.	Part No.	Description			Remark
C730	1-126-157-11	ELECT	10uF	20%	16V
C731	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C732	1-104-665-11	ELECT	100uF	20%	10V
C733	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C740	1-126-157-11	ELECT	10uF	20%	16V
C741	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C742	1-124-584-00	ELECT	100uF	20%	10V
C743	1-125-701-11	DOUBLE LAYER	0.047F		5.5V
C750	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C800	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C801	1-126-940-11	ELECT	330uF	20%	16V
		< CONNECTOR/JACK >			
* CN300	1-564-705-11	PIN, CONNECTOR (PC BOARD) 3P			
* CN350	1-573-486-11	PIN, CONNECTOR (PC BOARD) 8P			
CN400	1-774-699-12	JACK, PIN 4P (BUS AUDIO IN, AUDIO OUT)			
CN600	1-794-311-21	PLUG, CONNECTOR 12P			
CN700	1-774-701-11	PIN, CONNECTOR 16P (POWER)			
CN800	1-580-907-31	PLUG, CONNECTOR (BUS CONTROL IN)			
		< DIODE >			
D100	8-719-988-61	DIODE 1SS355TE-17			
D101	8-719-914-42	DIODE DA204K-T-146			
D102	8-719-109-89	DIODE MTZJ-T-77-5.6B			
D103	8-719-988-61	DIODE 1SS355TE-17			
D104	8-719-991-33	DIODE 1SS133T-77			
D351	8-719-991-33	DIODE 1SS133T-77			
D450	8-719-109-72	DIODE MTZJ-T-77-3.9B			
D620	8-719-110-03	DIODE MTZJ-T-77-7.5C			
D622	8-719-991-33	DIODE 1SS133T-77			
D630	8-719-110-49	DIODE MTZJ-T-77-18B (CA320/CA320X)			
D640	8-719-110-49	DIODE MTZJ-T-77-18B			
D650	8-719-110-49	DIODE MTZJ-T-77-18B			
D700	8-719-200-82	DIODE 11ES2-TA1B			
D710	8-719-049-38	DIODE 1N5404TU			
D720	8-719-988-61	DIODE 1SS355TE-17			
D721	8-719-200-82	DIODE 11ES2-TA1B			
D723	8-719-200-82	DIODE 11ES2-TA1B			
D724	8-719-200-82	DIODE 11ES2-TA1B			
D731	8-719-921-74	DIODE MTZJ-T-77-10A			
D740	8-719-200-82	DIODE 11ES2-TA1B			
D741	8-719-935-40	DIODE HZS6B2LTD			
D750	8-719-988-61	DIODE 1SS355TE-17			
D800	8-719-109-93	DIODE MTZJ-T-77-6.2B			
D801	8-719-110-49	DIODE MTZJ-T-77-18B			
D802	8-719-110-49	DIODE MTZJ-T-77-18B			
D805	8-719-109-97	DIODE MTZJ-T-77-6.8B			
		< DISCHARGE GAP >			
DSP100	1-519-504-1	GAP, DISCHARGE			
		< IC >			
IC1	6-700-280-01	IC MN101C49GTH1			
IC2	8-759-682-69	IC XC61CN4302MR			
IC3	8-759-586-59	IC TB2118F-EL-S			
IC350	8-759-924-46	IC BA4560F-T1			
IC400	8-759-827-11	IC LC75421M-TLM-E			

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Ref. No.	Part No.	Description			Remark
IC500	8-759-486-44	IC TDA7386			
IC800	8-759-096-16	IC MM1175XFF			
		< RESISTOR/SHORT >			
JC1	1-216-864-11	METAL CHIP	0	5%	1/16W
JC3	1-216-864-11	METAL CHIP	0	5%	1/16W
JC4	1-216-864-11	METAL CHIP	0	5%	1/16W
JC5	1-216-864-11	METAL CHIP	0	5%	1/16W
JC7	1-216-864-11	METAL CHIP	0	5%	1/16W
JC8	1-216-864-11	METAL CHIP	0	5%	1/16W
JC10	1-216-295-11	SHORT	0		
JC11	1-216-295-11	SHORT	0		
JC12	1-216-864-11	METAL CHIP	0	5%	1/16W
		< COIL >			
L1	1-410-509-11	INDUCTOR	10uH		
L100	1-410-324-11	INDUCTOR	4.7uH		
L101	1-410-502-11	INDUCTOR	2.7uH		
L102	1-424-759-21	COIL (AM ANT)			
L103	1-410-509-11	INDUCTOR	10uH		
L104	1-410-750-41	INDUCTOR	0.47uH		
L710	1-419-476-11	INDUCTOR	250uH		
		< TRANSISTOR >			
Q100	8-729-043-27	TRANSISTOR	PDTC114EK-115		
Q101	8-729-422-33	TRANSISTOR	2PD601AR-115		
Q102	8-729-043-32	TRANSISTOR	PDTA114EK-115		
Q103	8-729-904-60	TRANSISTOR	DTB113ZK-T-146		
Q104	8-729-205-97	TRANSISTOR	2SC3668-Y-TPE2		
Q105	8-729-043-28	TRANSISTOR	PDTC124EK-115		
Q106	8-729-027-26	TRANSISTOR	DTA114YKA-T146		
Q450	8-729-920-21	TRANSISTOR	DTC314TK-T-146		
Q451	8-729-920-21	TRANSISTOR	DTC314TK-T-146		
Q452	8-729-920-21	TRANSISTOR	DTC314TK-T-146		
Q453	8-729-920-21	TRANSISTOR	DTC314TK-T-146		
Q620	8-729-043-32	TRANSISTOR	PDTA114EK-115		
Q621	8-729-043-29	TRANSISTOR	PDTC144EK-115		
Q630	8-729-422-33	TRANSISTOR	2PD601AR-115		(CA320/CA320X)
Q640	8-729-422-33	TRANSISTOR	2PD601AR-115		
Q650	8-729-043-27	TRANSISTOR	PDTC114EK-115		
Q700	8-729-205-95	TRANSISTOR	2SA1428Y-TPF2		
Q702	8-729-043-27	TRANSISTOR	PDTC114EK-115		
Q703	8-729-205-95	TRANSISTOR	2SA1428Y-TPF2		
Q704	8-729-043-27	TRANSISTOR	PDTC114EK-115		
Q720	8-729-043-33	TRANSISTOR	PDTA124EK-115		
Q721	8-729-216-22	TRANSISTOR	2PB709AR-115		
Q722	8-729-205-95	TRANSISTOR	2SA1428Y-TPF2		
Q724	8-729-205-95	TRANSISTOR	2SA1428Y-TPF2		
Q725	8-729-043-27	TRANSISTOR	PDTC114EK-115		
Q726	8-729-043-27	TRANSISTOR	PDTC114EK-115		
Q730	8-729-921-48	TRANSISTOR	2SD1760F5-TRPQR		
Q731	8-729-216-22	TRANSISTOR	2PB709AR-115		
Q732	8-729-043-27	TRANSISTOR	PDTC114EK-115		
Q740	8-729-205-95	TRANSISTOR	2SA1428Y-TPF2		
Q741	8-729-422-33	TRANSISTOR	2PD601AR-115		
Q750	8-729-216-22	TRANSISTOR	2PB709AR-115		

Ref. No.	Part No.	Description			Remark
		< RESISTOR/DIODE/CAPACITOR >			
R1	1-216-864-11	METAL CHIP	0	5%	1/16W
R2	1-216-864-11	METAL CHIP	0	5%	1/16W
R3	1-216-821-11	METAL CHIP	1K	5%	1/16W
R4	1-216-864-11	METAL CHIP	0	5%	1/16W
R6	1-216-821-11	METAL CHIP	1K	5%	1/16W
R7	1-216-809-11	METAL CHIP	100	5%	1/16W
R8	1-216-845-11	METAL CHIP	100K	5%	1/16W
R9	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R11	1-216-809-11	METAL CHIP	100	5%	1/16W
R12	1-216-809-11	METAL CHIP	100	5%	1/16W
R20	1-216-864-11	METAL CHIP	0	5%	1/16W
R21	1-247-807-31	CARBON	100	5%	1/4W
R22	1-216-864-11	METAL CHIP	0	5%	1/16W
R23	1-216-845-11	METAL CHIP	100K	5%	1/16W
R26	1-249-441-11	CARBON	100K	5%	1/4W
R27	1-249-437-11	CARBON	47K	5%	1/4W
R32	1-247-807-31	CARBON	100	5%	1/4W
R33	1-247-807-31	CARBON	100	5%	1/4W
R34	1-247-807-31	CARBON	100	5%	1/4W
R41	1-216-864-11	METAL CHIP	0	5%	1/16W
R61	1-216-845-11	METAL CHIP	100K	5%	1/16W
R62	1-216-864-11	METAL CHIP	0	5%	1/16W (CA300)
R63	1-216-845-11	METAL CHIP	100K	5%	1/16W (CA320/CA320X)
R64	1-216-864-11	METAL CHIP	0	5%	1/16W (CA300)
R67	1-247-879-11	CARBON	100K	5%	1/4W (CA320/CA320X)
R69	1-216-845-11	METAL CHIP	100K	5%	1/16W
R70	1-216-864-11	METAL CHIP	0	5%	1/16W
R71	1-216-845-11	METAL CHIP	100K	5%	1/16W
R72	1-216-845-11	METAL CHIP	100K	5%	1/16W
R73	1-216-845-11	METAL CHIP	100K	5%	1/16W
R75	1-216-864-11	METAL CHIP	0	5%	1/16W (CA320X)
R76	1-216-845-11	METAL CHIP	100K	5%	1/16W (CA300/CA320)
R81	1-216-845-11	METAL CHIP	100K	5%	1/16W
R100	1-216-821-11	METAL CHIP	1K	5%	1/16W
R101	1-216-821-11	METAL CHIP	1K	5%	1/16W
R102	1-216-811-11	METAL CHIP	150	5%	1/16W
R103	1-216-821-11	METAL CHIP	1K	5%	1/16W
R104	1-216-792-11	METAL CHIP	3.9	5%	1/16W
R105	1-216-841-11	METAL CHIP	47K	5%	1/16W
R106	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R107	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R108	1-216-837-11	METAL CHIP	22K	5%	1/16W
R109	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R110	1-216-821-11	METAL CHIP	1K	5%	1/16W
R111	1-249-417-11	CARBON	1K	5%	1/4W
R112	1-249-417-11	CARBON	1K	5%	1/4W
R113	1-249-417-11	CARBON	1K	5%	1/4W
R114	1-216-833-11	METAL CHIP	10K	5%	1/16W
R115	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R116	1-216-821-11	METAL CHIP	1K	5%	1/16W

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Ref. No.	Part No.	Description			Remark
R117	1-216-835-11	METAL CHIP	15K	5%	1/16W
R118	1-216-834-11	METAL CHIP	12K	5%	1/16W
R119	1-216-841-11	METAL CHIP	47K	5%	1/16W
R120	1-216-838-11	METAL CHIP	27K	5%	1/16W
R124	1-216-809-11	METAL CHIP	100	5%	1/16W
R125	1-216-797-11	METAL CHIP	10	5%	1/16W
R127	1-247-823-11	CARBON	470	5%	1/4W
R126	1-216-833-11	METAL CHIP	10K	5%	1/16W
R150	1-216-821-11	METAL CHIP	1K	5%	1/16W
R151	1-216-821-11	METAL CHIP	1K	5%	1/16W
R152	1-216-834-11	METAL CHIP	12K	5%	1/16W
R153	1-216-834-11	METAL CHIP	12K	5%	1/16W
R154	1-216-864-11	METAL CHIP	0	5%	1/16W
R155	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R350	1-216-841-11	METAL CHIP	47K	5%	1/16W
R351	1-216-841-11	METAL CHIP	47K	5%	1/16W
R352	1-216-833-11	METAL CHIP	10K	5%	1/16W
R353	1-216-833-11	METAL CHIP	10K	5%	1/16W
R354	1-216-808-11	METAL CHIP	82	5%	1/16W
R355	1-216-808-11	METAL CHIP	82	5%	1/16W
R356	1-216-835-11	METAL CHIP	15K	5%	1/16W
R357	1-216-835-11	METAL CHIP	15K	5%	1/16W
R358	1-216-854-11	METAL CHIP	560K	5%	1/16W
R359	1-216-854-11	METAL CHIP	560K	5%	1/16W
R360	1-216-797-11	METAL CHIP	10	5%	1/16W
R361	1-216-821-11	METAL CHIP	1K	5%	1/16W
R362	1-249-417-11	CARBON	1K	5%	1/4W
R363	1-216-809-11	METAL CHIP	100	5%	1/16W
R364	1-216-809-11	METAL CHIP	100	5%	1/16W
R365	1-216-809-11	METAL CHIP	100	5%	1/16W
R366	1-216-809-11	METAL CHIP	100	5%	1/16W
R401	1-249-393-11	CARBON	10	5%	1/4W
R410	1-216-834-11	METAL CHIP	12K	5%	1/16W
R411	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R420	1-216-834-11	METAL CHIP	12K	5%	1/16W
R421	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R430	1-216-833-11	METAL CHIP	10K	5%	1/16W
R431	1-216-833-11	METAL CHIP	10K	5%	1/16W
R432	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R433	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R450	1-216-813-11	METAL CHIP	220	5%	1/16W
R451	1-216-813-11	METAL CHIP	220	5%	1/16W
R452	1-216-813-11	METAL CHIP	220	5%	1/16W
R453	1-216-813-11	METAL CHIP	220	5%	1/16W
R454	1-216-833-11	METAL CHIP	10K	5%	1/16W
R455	1-216-833-11	METAL CHIP	10K	5%	1/16W
R456	1-216-833-11	METAL CHIP	10K	5%	1/16W
R457	1-216-833-11	METAL CHIP	10K	5%	1/16W
R458	1-216-841-11	METAL CHIP	47K	5%	1/16W
R459	1-216-841-11	METAL CHIP	47K	5%	1/16W
R460	1-216-841-11	METAL CHIP	47K	5%	1/16W
R461	1-216-841-11	METAL CHIP	47K	5%	1/16W
R500	1-216-821-11	METAL CHIP	1K	5%	1/16W
R501	1-249-429-11	CARBON	10K	5%	1/4W
R502	1-216-833-11	METAL CHIP	10K	5%	1/16W
R503	1-216-801-11	METAL CHIP	22	5%	1/16W
R600	1-249-417-11	CARBON	1K	5%	1/4W
R601	1-249-417-11	CARBON	1K	5%	1/4W
R602	1-249-417-11	CARBON	1K	5%	1/4W
R603	1-249-417-11	CARBON	1K	5%	1/4W
R604	1-249-417-11	CARBON	1K	5%	1/4W
R605	1-249-417-11	CARBON	1K	5%	1/4W
R606	1-249-417-11	CARBON	1K	5%	1/4W
R607	1-249-417-11	CARBON	1K	5%	1/4W
R608	1-216-864-11	METAL CHIP	0	5%	1/16W
R620	1-216-805-11	METAL CHIP	47	5%	1/16W
R621	1-216-833-11	METAL CHIP	10K	5%	1/16W
R622	1-249-421-11	CARBON	2.2K	5%	1/4W
R630	1-247-831-11	CARBON	1K	5%	1/4W (CA320/CA320X)
R631	1-247-871-11	CARBON	47K	5%	1/4W (CA320/CA320X)
R632	1-216-833-11	METAL CHIP	10K	5%	1/16W (CA320/CA320X)
R633	1-216-833-11	METAL CHIP	10K	5%	1/16W (CA320/CA320X)
R634	1-216-845-11	METAL CHIP	100K	5%	1/16W (CA320/CA320X)
R635	1-216-845-11	METAL CHIP	100K	5%	1/16W (CA300)
R640	1-249-425-11	CARBON	4.7K	5%	1/4W
R641	1-216-841-11	METAL CHIP	47K	5%	1/16W
R642	1-216-841-11	METAL CHIP	47K	5%	1/16W
R643	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R644	1-216-845-11	METAL CHIP	100K	5%	1/16W
R650	1-249-417-11	CARBON	1K	5%	1/4W
R700	1-216-833-11	METAL CHIP	10K	5%	1/16W
R701	1-249-421-11	CARBON	2.2K	5%	1/4W
R702	1-249-421-11	CARBON	2.2K	5%	1/4W
R703	8-719-200-82	DIODE 11ES2-TA1B			
R704	1-260-299-11	CARBON	3.9	5%	1/2W
R705	1-216-833-11	METAL CHIP	10K	5%	1/16W
R706	1-249-421-11	CARBON	2.2K	5%	1/4W
R720	1-216-837-11	METAL CHIP	22K	5%	1/16W
R721	1-249-421-11	CARBON	2.2K	5%	1/4W
R722	1-249-421-11	CARBON	2.2K	5%	1/4W
R723	1-249-421-11	CARBON	2.2K	5%	1/4W
R724	1-249-421-11	CARBON	2.2K	5%	1/4W
R725	1-249-421-11	CARBON	2.2K	5%	1/4W
R728	1-216-837-11	METAL CHIP	22K	5%	1/16W
R730	1-216-833-11	METAL CHIP	10K	5%	1/16W
R731	1-249-421-11	CARBON	2.2K	5%	1/4W
R732	1-216-817-11	METAL CHIP	470	5%	1/16W
R740	1-216-837-11	METAL CHIP	22K	5%	1/16W
R751	1-216-841-11	METAL CHIP	47K	5%	1/16W
R752	1-216-838-11	METAL CHIP	27K	5%	1/16W
R753	1-216-809-11	METAL CHIP	100	5%	1/16W
R800	1-216-864-11	METAL CHIP	0	5%	1/16W
R801	1-216-833-11	METAL CHIP	10K	5%	1/16W
R802	1-216-809-11	METAL CHIP	100	5%	1/16W
R803	1-216-809-11	METAL CHIP	100	5%	1/16W
R810	1-216-845-11	METAL CHIP	100K	5%	1/16W
R811	1-216-864-11	METAL CHIP	0	5%	1/16W
R852	1-247-807-31	CARBON	100	5%	1/4W
R853	1-216-864-11	METAL CHIP	0	5%	1/16W
R855	1-164-315-11	CERAMIC CHIP	470PF	5%	50V

MAIN

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S1	1-692-431-21	SWITCH, TACTILE (RESET)	
S60	1-572-552-11	SWITCH, SLIDE (FREQUENCY SELECT)	(CA320/CA320X)
		< THERMISTOR >	
TH800	1-801-792-21	THERMISTOR, POSITIVE	
		< TUNER >	
TU100	1-693-511-11	FM/AM TUNER UNIT (FAE347-A13)	
		< VIBRATOR >	
X1	1-795-134-11	VIBRATOR, CRYSTAL (18.432MHz)	
X2	1-781-258-11	VIBRATOR, CRYSTAL (10.25MHz)	
X4	1-567-098-41	VIBRATOR, CRYSTAL (32.768kHz)	

MEMO

REVISION HISTORY

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Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2001.02	New
1.1	2001.05	Correcting of printing errors Part No. for CASSETTE DOOR, LIQUID CRYSTAL DISPLAY. BUTTON (+/–) for XR-CA320X addition. (ECN-CSA04518/CSA04596/CSA04854)
1.2	2001.05	Change of MAIN board resulting from changing the tuner unit. (ENG-01004)
1.3	2002.07	Addition of Russian model (XR-CA320X) (SPM-02005)
1.4	2003.08	Change of Part No. for Ref. No. 14 to EXPLODED VIEWS (ENG-03017)